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     (FILE 'HOME' ENTERED AT 10:15:02 ON 16 JUN 2004)

     FILE 'MEDLINE, HCAPLUS, BIOSIS, EMBASE, WPIDS, SCISEARCH, AGRICOLA'
     ENTERED AT 10:15:49 ON 16 JUN 2004
                SET DUPORDER FILE
L1          2130 S KRAUSE S?/AU
L2           338 S SUMNER C?/AU
L3          2456 S L1 OR L2
L4            17 S L3 AND PLASMON
L5        559884 S (MEASUR? OR ANALYS? OR ANALYZ? OR DETECT? OR ASSAY?)(5A)ENZYM
L6           455 S POLYMER?(3A)(LAYER? OR FILM?) AND L5
L7            16 S L6 AND QUARTZ(5A)MICROBALANC?
L8            18 S L6 AND PLASMON?
L9             4 S L6 AND ELLIPSOMET?
L10           15 S L6 AND IMPEDANCE?
L11            2 S L6 AND CAPACITOR#
L12            7 S L6 AND CAPACITANC?
L13          257 S L6 AND ELECTROD?
L14            5 S L13 AND (PROTEAS? OR PROTEINAS? OR DEXTRANASE# OR LIPAS?)
L15           15 S L6 AND TRANSDUCER#
L16           15 S L6 AND (PEPSIN# OR CHYMOTRYPSIN#)
L17           12 S L6 AND (POLYESTER# OR POLY(A)ESTER#) AND AMIDE#
L18            4 S L6 AND (POLYAMIDE# OR POLY(A)AMIDE#) AND ESTER#
L19           24 S L6 AND ?PYRROLIDONE?
L20           18 S L6 AND DEXTRAN?
L21           21 S L6 AND ?SUCCIN?
L22          105 S L6 AND ELECTROD? AND (GOLD OR AU OR SILVER OR AG OR PLATINUM
L23            1 S L22 AND (DEGRAD? OR DIGEST? OR PROTEOLY? OR HYDROLY?)
L24           44 S L6 AND (DEGRAD? OR DIGEST? OR PROTEOLY? OR HYDROLY?)
L25            6 S L24 AND HYDROXYBUTYRATE
L26          100 S L4 OR L7-L12 OR L14-L21 OR L23 OR L25
L27           68 DUP REM L26 (32 DUPLICATES REMOVED)

=> d ibib abs l27 1-68

L27  ANSWER 1 OF 68     MEDLINE on STN                    DUPLICATE 4
ACCESSION NUMBER:   2002246858     MEDLINE
DOCUMENT NUMBER:    PubMed ID: 11976307
TITLE:              TraG-like proteins of DNA transfer systems and of the
                    Helicobacter pylori type IV secretion system: inner
                    membrane gate for exported substrates?.
AUTHOR:             Schroder Gunnar; Krause Sabine; Zechner Ellen L;
                    Traxler Beth; Yeo Hye-Jeong; Lurz Rudi; Waksman Gabriel;
                    Lanka Erich
CORPORATE SOURCE:   Max-Planck-Institut fur Molekulare Genetik, Abteilung
                    Lehrach, Ihnestrasse 73, Dahlem, D-14195 Berlin, Germany.
SOURCE:             Journal of bacteriology, (2002 May) 184 (10) 2767-79.
                    Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY:       United States
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DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200205
ENTRY DATE: Entered STN: 20020503
Last Updated on STN: 20020528
Entered Medline: 20020522

AB TraG-like proteins are potential NTP hydrolases (NTPases) that are essential for DNA transfer in bacterial conjugation. They are thought to mediate interactions between the DNA-processing (Dtr) and the mating pair formation (Mpf) systems. TraG-like proteins also function as essential components of type IV secretion systems of several bacterial pathogens such as Helicobacter pylori. Here we present the biochemical characterization of three members of the family of TraG-like proteins, TraG (RP4), TraD (F), and HP0524 (H. pylori). These proteins were found to have a pronounced tendency to form oligomers and were shown to bind DNA without sequence specificity. Standard NTPase assays indicated that these TraG-like proteins do not possess postulated NTP-hydrolyzing activity. Surface **plasmon** resonance was used to demonstrate an interaction between TraG and relaxase TraI of RP4. Topology analysis of TraG revealed that TraG is a transmembrane protein with cytosolic N and C termini and a short periplasmic domain close to the N terminus. We predict that multimeric inner membrane protein TraG forms a pore. A model suggesting that the relaxosome binds to the TraG pore via TraG-DNA and TraG-TraI interactions is presented.

L27 ANSWER 2 OF 68 MEDLINE on STN DUPLICATE 6
ACCESSION NUMBER: 2002084840 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11811408
TITLE: Immobilization method for the preparation of biosensors based on pH shift-induced deposition of biomolecule-containing **polymer films.**
AUTHOR: Kurzawa Christian; Hengstenberg Andreas; Schuhmann Wolfgang
CORPORATE SOURCE: Analytische Chemie, Elektroanalytik & Sensorik, Ruhr-Universitat-Bochum, Germany.
SOURCE: Analytical chemistry, (2002 Jan 15) 74 (2) 355-61.
Journal code: 0370536. ISSN: 0003-2700.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200203
ENTRY DATE: Entered STN: 20020129
Last Updated on STN: 20020308
Entered Medline: 20020307

AB Miniaturization of amperometric biosensors is crucially dependent on the availability of methods for the nonmanual immobilization of biological recognition elements on the **transducer** surface. From an aqueous polymer suspension, the precipitation of a **polymer film** with entrapped biological recognition elements is initiated by electrochemically induced oxidation of H20 at the electrode surface.

Using the locally generated H+ gradient, acidic side chains of the polymer are titrated, leading to a change in the polymer solubility and hence to the controlled deposition of a **polymer film.** To investigate the properties and limitations of this immobilization technology, the specific features of a glucose biosensor based on polymer-entrapped glucose oxidase and amperometric **detection** of **enzymatically** generated H202 were investigated. Besides the reproducibility of the immobilization procedure, the sensitivity (14.59 mA cm(-2) M(-1) at pH 7), long-term stability (up to 5000 measurements in a sequential-injection **analyzer**), dependence on **enzyme** concentration, polymer thickness, and possibilities to fabricate multilayer sensor architectures were exploited. In addition, the miniaturization potential of this nonmanual immobilization technology was evaluated by investigating the modification of microband electrode arrays and cross talk between the neighboring microsensors.

L27 ANSWER 3 OF 68 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 2001418310 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11467532
TITLE: Elaboration and characterization of spatially controlled assemblies of complementary polyphenol oxidase-alkaline phosphatase activities on electrodes.
AUTHOR: Mousty C; Bergamasco J L; Wessel R; Perrot H; Cosnier S
CORPORATE SOURCE: Laboratoire d'Electrochimie Organique et de Photochimie Redox, UMR CNRS 5630, Universite Joseph Fourier Grenoble, France.
SOURCE: Analytical chemistry, (2001 Jul 1) 73 (13) 2890-7. Journal code: 0370536. ISSN: 0003-2700.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200108
ENTRY DATE: Entered STN: 20010827
Last Updated on STN: 20010827
Entered Medline: 20010823

AB The electrooxidation of a biotin pyrrole has allowed the formation of biotinylated polypyrrole films. Gravimetric measurements based on a **quartz** crystal **microbalance** demonstrate the efficient coupling of avidin, biotinylated polyphenol oxidase (PPO-B) and avidin-labeled alkaline phosphatase (AP-A) with the underlying biotinylated **polymer film.** The estimated mass increase corresponds to the anchoring of 1.6-1.8 equivalent layer of proteins. A step-by-step construction of bienzyme multilayers composed of PPO-B and AP-A was carried out on the electrode surface modified by the biotinylated polypyrrole film through avidin-biotin bridges. A spatially controlled distribution of the two enzymes was performed by the formation of one AP-A layer on 1, 5, and 10 PPO-B layers. The resulting bienzyme electrodes were applied to the determination of phenyl phosphate on the basis of amperometric **detection** of **enzymically** generated o-quinone at -0.2 V. Their analytical performances were

analyzed in relation to the design of the enzyme architectures and in comparison with the amperometric behavior of the monoenzymatic electrodes (PPO-B electrode and AP-A electrode). It appears that at the 10-layer-PPO-B polypyrrole electrode only 4% of phenol is transformed, whereas 42-69% of phenyl phosphate is **enzymatically** consumed and **detected** at the AP-A polypyrrole electrode, depending on the enzyme activity. For the bienzymatic AP-A/PPO-B polypyrrole electrodes, the activity of each immobilized enzyme clearly affects the biosensor performance, the main limiting factor being the very low efficiency of PPO-B at pH 8.8.

L27 ANSWER 4 OF 68 MEDLINE on STN DUPLICATE 8
ACCESSION NUMBER: 2001571815 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11679248
TITLE: Biosensor based on enzyme-catalysed degradation of thin **polymer films.**
AUTHOR: **Sumner C**; **Krause S**; Sabot A; Turner K; McNeil C J
CORPORATE SOURCE: Department of Chemistry, University of Sheffield, Sheffield S3 7HF, UK.
SOURCE: Biosensors & bioelectronics, (2001 Dec) 16 (9-12) 709-14. Journal code: 9001289. ISSN: 0956-5663.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200202
ENTRY DATE: Entered STN: 20011029
Last Updated on STN: 20020226
Entered Medline: 20020225

AB A biosensor based on the enzyme-catalysed dissolution of biodegradable **polymer films** has been developed. Three polymer-enzyme systems were investigated for use in the sensor: a **poly(ester amide)**, which is degraded by the proteolytic enzyme alpha-**chymotrypsin**; a **dextran** hydrogel, which is degraded by **dextranase**; and poly(trimethylene) **succinate**, which is degraded by a lipase. Dissolution of the **polymer films** was monitored by Surface **Plasmon** Resonance (SPR). The rate of degradation was directly related to enzyme concentration for each polymer/enzyme couple. The **poly(ester amide)**/alpha-**chymotrypsin** couple proved to be the most sensitive over a concentration range from 4 x 10(-11) to 4 x 10(-7) mol l(-1) of enzyme. The rate of degradation was shown to be independent of the thickness of the **poly(ester amide)** films. The **dextran** hydrogel/**dextranase** couple was less sensitive than the **poly(ester amide)**/alpha-**chymotrypsin** couple but showed greater degradation rates at low enzyme concentrations. Enzyme concentrations as low as 2 x 10(-11) mol l(-1) were detected in less than 20 min. Potential fields of application of such a sensor system are the **detection** of **enzyme** concentrations and the construction of disposable

enzyme based immunosensors, which employ the polymer-degrading enzyme as an enzyme label.

L27 ANSWER 5 OF 68 MEDLINE on STN DUPLICATE 10
ACCESSION NUMBER: 2001057805 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11080868
TITLE: A **transducer** based on enzyme-induced degradation of thin **polymer films** monitored by surface **plasmon** resonance.
AUTHOR: **Sumner C**; Sabot A; Turner K; **Krause S**
CORPORATE SOURCE: Department of Chemistry, University of Sheffield, U.K.
SOURCE: Analytical chemistry, (2000 Nov 1) 72 (21) 5225-32.
Journal code: 0370536. ISSN: 0003-2700.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200012
ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20001215

AB A novel **transducer** based on the dissolution of biodegradable **polymer films** as a direct result of enzymatic reaction has been developed. Three polymers were investigated for use in the **transducer**: a **poly(ester amide)**, which is degraded by the proteolytic enzyme alpha-**chymotrypsin**; a **dextran** hydrogel, which is degraded by **dextranase**; and poly(trimethylene) **succinate**, which is degraded by a lipase. Degradation of the **polymer films** was monitored by surface **plasmon** resonance (SPR) and **impedance** measurements. SPR was shown to be suitable for a greater variety of materials, since it does not require the **polymer film** to be electrically insulating. Rate of degradation was shown to be directly related to enzyme concentration for each polymer/enzyme couple. The **poly(ester amide)**/alpha-**chymotrypsin** couple proved to be the most sensitive. Degradation of the films was complete in less than 20 min for enzyme concentrations greater than 9 x 10(-9) mol dm-3. Enzyme concentrations as low as 4 x 10(-11) mol dm-3 were detected in less than 30 min. The **transducer** has great potential for the **detection** of **enzyme** concentrations as well as for use in immunosensing where the enzyme degrading the polymer would be the enzyme label.

L27 ANSWER 6 OF 68 MEDLINE on STN DUPLICATE 15
ACCESSION NUMBER: 96065272 MEDLINE
DOCUMENT NUMBER: PubMed ID: 7593011
TITLE: Protein-rejecting ability of surface-bound **dextran** in end-on and side-on configurations: comparison to PEG.
AUTHOR: Osterberg E; Bergstrom K; Holmberg K; Schuman T P; Riggs J A; Burns N L; Van Alstine J M; Harris J M
CORPORATE SOURCE: Berol Nobel, Stenungsund, Sweden.

SOURCE: Journal of biomedical materials research, (1995 Jun) 29 (6) 741-7.
Journal code: 0112726. ISSN: 0021-9304.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199511
ENTRY DATE: Entered STN: 19960124
Last Updated on STN: 19960124
Entered Medline: 19951130

AB There is much interest in attaching polyethylene glycol (PEG) and other hydrophilic, neutral polymers to surfaces to reduce the extent of protein and cell adsorption. Interestingly, these same surface-bound polymers are effective in masking surface charge and reducing electrokinetic effects such as particle electrophoretic mobility, streaming potential, and electroosmosis. It is apparent that similar molecular properties are responsible for both protein and cell rejection and reduction of electrokinetic effects. In this work we compared the fibrinogen-rejecting ability and the effect on electrophoretic mobility of three polymer coatings bound to polystyrene. The three polymers were side-bound **dextran**, end-bound **dextran**, and end-bound PEG. The results of these measurements were used to elucidate the importance of polymer packing density and **polymer layer** thickness on protein adsorption and reduction of electrokinetic effects. Protein adsorption appears not to be sensitive to **polymer layer** thickness or the presence of dilute polymer tails in a surface coating, while electrokinetic effects are. Protein adsorption is, however, very sensitive to the availability of exposed surface. Finally, the unique effectiveness of PEG is apparent in this research as in previous studies.

L27 ANSWER 7 OF 68 MEDLINE on STN
ACCESSION NUMBER: 2003152974 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12643755
TITLE: Generation of a functional monomolecular protein lattice consisting of an s-layer fusion protein comprising the variable domain of a camel heavy chain antibody.
AUTHOR: Pleschberger Magdalena; Neubauer Angela; Egelseer Eva M; Weigert Stefan; Lindner Brigitte; Sleytr Uwe B; Muyldermans Serge; Sara Margit
CORPORATE SOURCE: BMT-Biomolecular Therapeutics GmbH, Brunnerstrasse 59, A-1235 Vienna, Austria.
SOURCE: Bioconjugate chemistry, (2003 Mar-Apr) 14 (2) 440-8.
Journal code: 9010319. ISSN: 1043-1802.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200311
ENTRY DATE: Entered STN: 20030403
Last Updated on STN: 20031217

Entered Medline: 20031118

AB Crystalline bacterial cell surface layer (S-layer) proteins are composed of a single protein or glycoprotein species. Isolated S-layer subunits frequently recrystallize into monomolecular protein lattices on various types of solid supports. For generating a functional protein lattice, a chimeric protein was constructed, which comprised the secondary cell wall polymer-binding region and the self-assembly domain of the S-layer protein SbpA from Bacillus sphaericus CCM 2177, and a single variable region of a heavy chain camel antibody (cAb-Lys3) recognizing lysozyme as antigen. For construction of the S-layer fusion protein, the 3'-end of the sequence encoding the C-terminally truncated form rSbpA(31)(-)(1068) was fused via a short linker to the 5'-end of the sequence encoding cAb-Lys3. The functionality of the fused cAb-Lys3 in the S-layer fusion protein was proved by surface **plasmon** resonance measurements. Dot blot assays revealed that the accessibility of the fused functional sequence for the antigen was independent of the use of soluble or assembled S-layer fusion protein. Recrystallization of the S-layer fusion protein into the square lattice structure was observed on peptidoglycan-containing sacculi of B. sphaericus CCM 2177, on polystyrene or on gold chips precoated with thiolated secondary cell wall polymer, which is the natural anchoring molecule for the S-layer protein in the bacterial cell wall. Thereby, the fused cAb-Lys3 remained located on the outer S-layer surface and accessible for lysozyme binding. Together with solid supports precoated with secondary cell wall **polymers**, S-**layer** fusion proteins comprising rSbpA(31)(-)(1068) and cAbs directed against various antigens shall be exploited for building up monomolecular functional protein lattices as required for applications in nanobiotechnology.

L27 ANSWER 8 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2003:364373 HCAPLUS
DOCUMENT NUMBER: 140:177476
TITLE: Mass-sensitive **detection** of cells, viruses and **enzymes** with artificial receptors
AUTHOR(S): Hayden, Oliver; Bindeus, Roland; Haderspock, Claudia; Mann, Karl-Jurgen; Wirl, Barbara; Dickert, Franz L.
CORPORATE SOURCE: Institute of Analytical Chemistry, Vienna University, Vienna, A-1090, Austria
SOURCE: Sensors and Actuators, B: Chemical (2003), B91(1-3), 316-319
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Synthetic polymer receptors for the online monitoring of bioanalytes are formed directly onto **quartz** crystal **microbalances** using surface imprinting techniques. The molded materials are capable of enriching whole cells, viruses and enzymes on the sensor layer surface. Enzyme imprinted **polymer layers** are also effective as nucleation site for the induction of protein crystallization Differential measurements are done with a single piezocrystal having two screen-printed gold electrodes for a sensitive and a reference channel.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 9 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2002:293491 HCAPLUS
DOCUMENT NUMBER: 136:306383
TITLE: Improvements in detection using an indicator having a signaling layer protected by a degradable layer
INVENTOR(S): Ferguson, Drew Mercer; Milan, Guy Dimitri; Dow, Crawford Stewart; Swoboda, Uthaya
PATENT ASSIGNEE(S): Cambridge Meditech Limited, UK
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002030478	A2	20020418	WO 2001-GB4588	20011015
WO 2002030478	A3	20020725		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2001094047	A5	20020422	AU 2001-94047	20011015
EP 1326653	A2	20030716	EP 2001-974532	20011015
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
BR 2001014478	A	20031118	BR 2001-14478	20011015
JP 2004510995	T2	20040408	JP 2002-533917	20011015
US 2004043422	A1	20040304	US 2003-381426	20030715

PRIORITY APPLN. INFO.: GB 2000-25084 A 20001013
WO 2001-GB4588 W 20011015

AB The present invention provides an indicator for the in-situ detection of the presence of a substance or a microbe at a location. The indicator comprises a layer (8) which is susceptible to degradation by the substance or microbe or a first substance associated with the microbe and a signaling layer (7) which is adapted to produce a detectable signal which indicates the presence of the substance or microbe or a second substance associated with the microbe or a further substance which is located at substantially the same location as the substance or microbe. In use the signaling layer is at least initially protected from contact with the substance or microbe or the second substance associated with the microbe or the further substance which is located at substantially the same location as the substance or

microbe by the degradable layer. A cell with two chambers separated by a vertical wall of chitosan had lysozyme and blue dye in one side and water in the other. Two concns. of lysozyme could be discriminated.

L27 ANSWER 10 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 9
ACCESSION NUMBER: 2000:157844 HCAPLUS
DOCUMENT NUMBER: 132:163142
TITLE: Preparation of microtiterplates for assays and screenings by surface modification with polymers that are pH or redox sensitive, or are molecular imprinted polymers
INVENTOR(S): Piletsky, Sergiy; Ulbricht, Mathias; Schedler, Uwe; Piletska, Olena; Panasyuk, Tetyana; Sergeyeva, Tetyana; Ganna, Elska
PATENT ASSIGNEE(S): Poly-An G.m.b.H., Germany
SOURCE: Ger. Offen., 12 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19832598	A1	20000309	DE 1998-19832598	19980709
DE 19832598	C2	20020214		

PRIORITY APPLN. INFO.: DE 1998-19832598 19980709
AB The invention concerns the preparation of microtiterplates with stable and insol. **polymer** surface **layers** that are pH and/or redox indicators or are mol. imprinted and the application of these plates for assays and screenings in combination with fluorescence, or radioactive quantitation. Plates are coated using chemical or photochem. grafting, radical or ionic polymerization, and/or using template mols. **Polymer layers** are polyaniline, polypyrrole, polythiophene, etc. Enzymes, receptors, antibodies or cells can be immobilized onto the layered microtiterplates, or the layers are functionalized with addnl. groups. The microtiterplate and the layer are made of the same or different material; the material is preferably transparent.

L27 ANSWER 11 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 1997:249125 HCAPLUS
DOCUMENT NUMBER: 126:264668
TITLE: A spectrophotometric method for **detection** of **enzymic degradation** of thin **polymer films**
AUTHOR(S): Timmins, M. R.; Gilmore, D. F.; Lotti, N.; Scandola, M.; Fuller, R. C.; Lenz, R. W.
CORPORATE SOURCE: Dep. Polymer Sci. Eng., Univ. Massachusetts, Amherst, MA, 01003, USA
SOURCE: Journal of Environmental Polymer Degradation (1997), 5(1), 1-15

CODEN: JEPDED; ISSN: 1064-7546
PUBLISHER: Plenum
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An assay method has been developed for monitoring the enzymic degradation of thin **films** of translucent **polymers.** The method was based on the observation that when a solution-cast film of poly(3-**hydroxybutyrate**-co-3-hydroxyvalerate) (PHBV) was exposed to a solution of a depolymerase from Pseudomonas lemoignei, the surface of the film roughened and the film became visibly turbid. This increase in turbidity could be measured spectrophotometrically and was reproducible during the initial stage of degradation Turbidity correlated very closely with film weight loss early in the degradation but reached a maximum value before extensive degradation had taken place. For a given set of films, this correlation was independent of the concentration of the enzyme used, although it did vary with the mode of enzyme exposure. The turbidity was associated with the exposure of crystalline domains due to the removal of amorphous material from the film surface. The increase in crystallinity at the surface was verified by attenuated total reflectance IR spectroscopy (ATRIR). In conjunction with SEM, weight loss, and ATRIR, the film turbidity assay provided much semiquant. insight into the mechanism of the enzymic degradation reaction. This **assay** was used to study the **enzymic** degradation of films of PHBV solution blended with cellulose acetate esters (CAE). The presence of only 25% of CAE of degree of substitution 2.9 severely hampered the enzymic **degradability** of PHBV, a result which is consistent with the environmental degradation of these same samples exposed to activated sludge.

L27 ANSWER 12 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 12
ACCESSION NUMBER: 1996:230079 HCAPLUS
DOCUMENT NUMBER: 124:262423
TITLE: Effect of tacticity on enzymic **degradability** of poly(β- **hydroxybutyrate**)
AUTHOR(S): Timmins, Mark R.; Lenz, Robert W.; Hocking, Philippa J.; Marchessault, Robert H.; Fuller, R. Clinton
CORPORATE SOURCE: Polymer Science & Engineering Dep., Univ. Massachusetts, Amherst, MA, 01003, USA
SOURCE: Macromolecular Chemistry and Physics (1996), 197(4), 1193-215
CODEN: MCHPES; ISSN: 1022-1352
PUBLISHER: Huethig & Wepf
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Films of synthetic poly(β-hydroxybutyrates) (PHB) ranging from highly isotactic to moderately syndiotactic were cast from each of several polymer fractions isolated from ring-opening polymns. of racemic β-butyrolactone and were subjected to degradation by the extracellular PHB depolymerases of the bacterium Pseudomonas lemoignei and the fungus Aspergillus fumigatus M2A. Films of bacterially produced PHB were also

degraded for comparison. Gravimetric detns. of **enzymic** degradation were **measured** relative to control expts. in which no depolymerase was added. Each sample was exposed to the same concentration of enzyme, as determined by the activity of the enzyme solns. towards bacterial PHB powder, and the degradation behavior varied strongly with the tacticity of the samples. Weight loss was greatest for the bacterial **polymer**, with **films** being completely **degraded** by either enzyme in 48 h. The degradation of the synthetic sample by both enzymes followed similar trends, although the fungal depolymerase effected less rapid degradation for all synthetic samples than did the bacterial enzyme. Of the synthetic PHB samples, those of intermediate tacticity (55-60% isotactic diads) exhibited the greatest rate of weight loss, while those most syndiotactic in nature (34-45% isotactic) **degraded** the most slowly. The observed rates are interpreted in terms of isotactic contents, tacticity sequence distributions, and sample crystallinities.

L27 ANSWER 13 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 14
ACCESSION NUMBER: 1995:835983 HCAPLUS
DOCUMENT NUMBER: 123:222132
TITLE: Electrochemical Sensors Based on **Impedance Measurement** of **Enzyme**-Catalyzed Polymer Dissolution: Theory and Applications
AUTHOR(S): McNeil, Calum J.; Athey, Dale; Ball, Mark; Ho, Wah On; Krause, Steffi; Armstrong, Ron D.; Des Wright, J.; Rawson, Keith
CORPORATE SOURCE: Medical School, University of Newcastle upon Tyne, Newcastle upon Tyne, NE2 4HH, UK
SOURCE: Analytical Chemistry (1995), 67(21), 3928-35
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel sensor approach based on ac **impedance measurement** of **capacitance** changes produced during **enzyme**-catalyzed dissoln. of polymer coatings on electrodes, leading to a 4 orders of magnitude change in **capacitance**, is described. Electrodes were coated with an enteric polymer material, Eudragit S 100, which is based on Me methacrylate, and dissoln. was exemplified by utilizing the catalytic action of the enzyme urease. The resulting alkaline pH change caused dissoln. of the **polymer film** with a consequent large increase in **capacitance.** A mechanism for polymer breakdown is proposed which has been validated exptl. using both ac **impedance** measurements and electron microscopy. The large changes in **capacitance** that are apparent using this technique allow much greater sensitivity of measurement than, for example, potentiometric electrodes. The potential broad clin. anal. application of this technique is demonstrated in this report by application to urea **measurement** and to **enzyme** immunoassay. Urea measurement between 2 and 100 mM has been achieved with a change in response over this concentration range by over 4 orders of magnitude.

We have taken account of both the effect of protein adsorption on the surface of the polymer-coated and bare electrodes and the effect of buffer capacity when carrying out these measurements in buffered solns. containing 8% (w/v) protein and have demonstrated that the method should allow simple, interference-free measurement of urea in serum and whole blood. In addition, both competitive and noncompetitive enzyme immunoassays for human IgG based on the use of urease-antibody conjugates are reported. Human IgG, or goat anti-human IgG (Fab specific), were immobilized covalently onto cellulosic membranes via a diamine spacer group and the membranes placed over enteric polymer-coated electrodes. Specific measurement of IgG in both formats was achieved over the concentration range 0.0001-100 μg mL-1. The performances of the **impedance**-based enzyme immunoassays were compared directly with identical assays employing spectrophotometric detection.

L27 ANSWER 14 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 16
ACCESSION NUMBER: 1994:318456 HCAPLUS
DOCUMENT NUMBER: 120:318456
TITLE: Electrical charge in a redox polymer and its effect on glucose sensor enzymic electrodes response
AUTHOR(S): Ibanez, Jorge G.
CORPORATE SOURCE: Dep. Chem. Eng., Univ. Texas, Austin, TX, 78712, USA
SOURCE: Afinidad (1994), 51(450), 147-56
CODEN: AFINAE; ISSN: 0001-9704
DOCUMENT TYPE: Journal
LANGUAGE: Spanish
AB The authors have studied the effect of elec. charge on a conductive polymer containing a redox center upon the current response of an **enzymic** electrode for glucose **detection.** The pos. charge on the cationic polymer (polyvinilimidazole) induces the formation of an electrostatic complex with the neg. (polyanionic) part of glucose oxidase, facilitating charge transfer. In order to have a more resistant bond, these species are crosslinked with a polyethyleneglycol ether. However, if the charge on the polymer is very high, charge transfer is limited. To avoid this, the authors reacted the polymer with **bromosuccinic** acid as to introduce partial neg. charges in it, thus decreasing its pos. charge. Current responses with these modified **polymer films** show a slower decay rate than those with unmodified films. This may be due to a weaker interaction between the polymer and the semiquinone-type radical intermediate formed during the redox process of the FAD.

L27 ANSWER 15 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 17
ACCESSION NUMBER: 1993:555106 HCAPLUS
DOCUMENT NUMBER: 119:155106
TITLE: Piezoelectric pH sensors: AT-cut quartz resonators with amphoteric **polymer films**
AUTHOR(S): Wang, Juan; Ward, Michael D.; Ebersole, Richard C.; Foss, Robert P.
CORPORATE SOURCE: Dep. Chem. Eng. Mater. Sci., Univ. Minnesota, Minneapolis, MN, 55455, USA

SOURCE: Analytical Chemistry (1993), 65(19), 2553-62
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Piezoelec. AT-cut quartz resonators immersed in aqueous media, coated with crosslinked films of the random copolymer-{[CH2CH(CO2H)]a-[CH2CH(CO2CH3)]b-[CH2CH(CO2CH2CH2NMe2)]c}n, exhibit large frequency changes when the pH is changed in the vicinity of the isoelec. point of the **polymer film.** The frequency changes are attributed to changes in the viscoelastic properties of the films that occur during phase transitions between the isoelec. form and the cationic polymer (1-NMe2H+) present at low pH or the anionic polymer (1-CO2-) present at high pH. These phase transitions are accompanied by dramatic changes in acoustic energy attenuation, film thickness changes, and film surface energy, as indicated by acoustic **impedance** anal., phase measurement interferometric microscopy, and contact angle measurements. The results are consistent with pH-dependent segregation of the isoelec. and ionic phases within the bulk and between the bulk and the surface. The unique pH-sensing capabilities of the coated resonators, combined with their robustness, ease of fabrication, and low cost, provide a convenient approach for the measurement of "threshold" pH changes. Real-time **measurements** of **enzymic** activity and microbe metabolism are demonstrated as examples of potential applications of these sensors.

L27 ANSWER 16 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 18
ACCESSION NUMBER: 1992:647740 HCAPLUS
DOCUMENT NUMBER: 117:247740
TITLE: Multiple-layer **analysis** element having low dispersion of **enzyme** activity and good shelf-life
INVENTOR(S): Murakami, Takashi; Tsuji, Toshio; Hidaka, Seiji
PATENT ASSIGNEE(S): Konica Co., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04229191	A2	19920818	JP 1990-408179	19901227

PRIORITY APPLN. INFO.: JP 1990-408179 19901227

AB The title multiple-layer anal. element comprises from the bottom a supporting layer, a reagent layer containing the enzymes and hydrophilic **polymer**(s), and a **layer** of hydrophilic and organic solvent-soluble polymer to prevent the dispersion of the enzymic activity. The hydrophilic and organic solvent-soluble polymer is coated or laminated on the reagent layer using a solvent having a very low polarity and a relative evaporation rate of 0.5-0.6. On the top of the hydrophilic and organic

solvent-soluble **polymer layer**, an addnl. adhesive and/or developing layer can be coated or laminated. Preparation of a multiple-layer anal. element for serum anal. by coating a vinylpyrolidone-vinly acetate copolymer- dissolved in n-butanol on a reagent layer containing diaphorase and ascorbic acid oxidase was shown.

L27 ANSWER 17 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:60030 HCAPLUS
DOCUMENT NUMBER: 140:124835
TITLE: Method, film, and kit for chemiluminescent detection
INVENTOR(S): Levison, Derek W. k.; Moller, Uwe; Levison, Stuart
PATENT ASSIGNEE(S): EMP Biotech GmbH, USA
SOURCE: U.S. Pat. Appl. Publ., 19 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004014200	A1	20040122	US 2002-195978	20020716
WO 2004007745	A2	20040122	WO 2003-US21063	20030703
WO 2004007745	A3	20040311		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-195978 A 20020716

AB The invention provides chemiluminescent assays that incorporate a film including at least one chemiluminescent precursor immobilized therewith which produces a triggerable chemiluminescent compound, the film being free of compds. which generate singlet oxygen and being adapted for use with a sensitizer-labeled agent or agent probative of the analyte. An activated N-**hydroxysuccinimide ester** of methylene blue sensitizer coupled to an oligonucleotide or an antibody was used in dot blot hybridization or immunoassay. A membrane containing hybridized target DNA was placed on a glass plate. Another membrane containing immobilized precursor chemiluminescent olefin was placed on top and covered with a sheet of black paper and another glass plate. The sandwich formation was exposed to red light for 15 min. to form a triggerable chemiluminescent precursor compound on the film. The membrane containing the triggerable chemiluminescent precursor compound was placed on top of a transparent plastic film covering a sheet of Hyperfilm ECL and NaOH was added to

activate chemiluminescence. The Hyperfilm ECL was developed.

L27 ANSWER 18 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:260760 HCAPLUS
DOCUMENT NUMBER: 138:268006
TITLE: Sensors with variable response behavior for detecting pathogens
INVENTOR(S): Stanford, Thomas B.; Van Ast, Camille I.; Yamagishi, Frederick G.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 18 pp., Cont.-in-part of Appl. No. PCT/US01/28717.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003062263	A1	20030403	US 2002-230947	20020829
US 6730212	B1	20040504	US 2000-679428	20001003
WO 2002029378	A2	20020411	WO 2001-US28717	20010914
WO 2002029378	C1	20021219		
WO 2002029378	A3	20030417		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-679428 A1 20001003
US 2001-316111P P 20010829
WO 2001-US28717 A2 20010914

AB A sensor and method for detecting biol. and chemical agents comprises metal interdigitized **electrodes** coated with hybrid **polymer** -based conducting **film** and an instrument for applying elec. voltage to the **electrodes** and registering the change in elec. current. The hybrid film also comprises indicator biomols. encapsulated within the film or attached to it. The bioindicator mols. preferably comprise enzyme acetylcholinesterase. When these indicator biomols. come in a contact with a pathogen, chemical and/or morphol. changes occur in the film and elec. current flowing through the **electrodes** is modulated. The pathogen comprise inhibitors of enzymes, preferably organophosphates, thiophosphates or phosphonates. The change in current indicates the presence of a biol. and chemical agent and is registered. A sensor for malathion and parathion used interdigitated **electrodes** coated with a thin film of 2-(3,4-epoxycyclohexyl)ethyltrimethoxysilane

blended with 3-aminopropyltriethoxysilane containing about 10% polyaniline sulfonic acid and containing acetylcholinesterase as bioindicator.

L27 ANSWER 19 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:289742 HCAPLUS
DOCUMENT NUMBER: 140:90014
TITLE: Oxidase enzyme immobilization through electropolymerized films to assemble biosensors for batch and flow injection analysis
AUTHOR(S): Badea, Mihaela; Curulli, Antonella; Palleschi, Giuseppe
CORPORATE SOURCE: Dipartimento di Scienze e Tecnologie Chimiche, Universita di Roma "Tor Vergata", Rome, 00133, Italy
SOURCE: Biosensors & Bioelectronics (2003), 18(5-6), 689-698
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Glucose oxidase, lactate oxidase, L-amino acid oxidase and alc. oxidase were immobilized on new films based on 2,6-dihydroxynaphthalene (2,6-DHN) copolymd. with 2-(4-aminophenyl)-ethylamine (AP-EA) onto the Pt electrodes. The electropolymn. was performed by cyclic voltammetry. Different scan rates and scan potential ranges were investigated and selected according to the monomers used. These sensors were tested for hydrogen peroxide, ascorbic acid and acetaminophen by cyclic voltammetry and amperometry. The amperometric studies were carried out in batch as well as in a flow injection anal. (FIA) system. Anal. parameters such as reproducibility, interference rejection, response time, buffer, storage and operational time of the sensors have been studied. These films were also characterized by XPS. Different strategies for enzyme immobilization were performed and discussed: enzyme entrapment in the film during the electropolymn. and covalent attachment of the enzyme to the film via a carbodiimide (1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, EDC) or glutaraldehyde. Different parameters were considered in order to optimize the immobilization procedures. Results provide a guide to design high sensitive, stable and interference-free biosensors. In addition, studies were performed using these probes in an original FIA based on solenoidal valves. Sensor stability, life time and dynamic range were also optimized in these conditions.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 20 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:849478 HCAPLUS
DOCUMENT NUMBER: 140:402521
TITLE: Miniaturized potentiometric sensors based on pH-dependent polymers
AUTHOR(S): Lakard, Boris; Herlem, Guillaume; de Labachelerie, Michel; Jeannot, Jean-Claude; Daniau, William; Robert, Laurent; Spajer, Daniel; Martin, Gilles; Fahys, Bernard

CORPORATE SOURCE: Laboratory of Chemistry Materials and Interfaces, University of Franche-Comte, Besancon, Besancon, 25030, Fr.
SOURCE: Proceedings - Electrochemical Society (2003), 2003-12(Mechanistic and Synthetic Aspects of Organic and Biological Electrochemistry), 193-196
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Novel pH sensors and urea biosensors using a platinum electrode coated with polymers are addressed in this study. We present electrochem. modified platinum electrodes. Their modification results from the anodic oxidation of pure di- or triamines which leads to the formation of linear polyethyleneimine, L-PEI, or linear polypropyleneimine, L-PPI, coatings in one step. Since the assembly of the electrode surface coated with these polymers acts as a **transducer** of the potential electrode vs. the pH value or the urea concentration, we show it is possible to develop miniaturized potentiometric pH sensors and to immobilize urease in the **polymeric films** so as to elaborate enzymic biosensors.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 21 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:331906 HCAPLUS
DOCUMENT NUMBER: 136:337313
TITLE: Patterned surfaces for bioconjugation and their preparation
INVENTOR(S): Klapproth, Holger; Wagner, Gerhard
PATENT ASSIGNEE(S): Biochip Technologies G.m.b.H., Germany
SOURCE: Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1202062	A1	20020502	EP 2000-123706	20001031
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
WO 2002037110	A1	20020510	WO 2001-EP12531	20011030
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,				

BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002012351	A5	20020515	AU 2002-12351	20011030
JP 2004513344	T2	20040430	JP 2002-539813	20011030
US 2004096849	A1	20040520	US 2003-415481	20030430

PRIORITY APPLN. INFO.: EP 2000-123706 A 20001031
WO 2001-EP12531 W 20011030

AB The invention relates to a method for the large scale production of patterned active surfaces for bioconjugation comprising the steps of:(a) preparing a self-supporting **film** of a polyfunctional **polymer** network comprising an assembly of cross-linked polymer subchains, wherein each polymer subchain comprises a multitude of identical or different repeating units carrying one or more functional groups which allow an interaction of the polymer with one or more probe mols., (b) providing said self-supporting film with patterned arrays of said one or more probe mols. via an interaction with said functional groups, and (c) fixing said self-supporting film on a solid surface. In a preferred embodiment of the invention the patterned active surface obtained is cut into an endless tape of a desired format and wound up onto a drum. This "endless chip" is ready for fixing to a solid surface of any material or shape. N-methacryloyl-6-aminocapronic acid **hydroxysuccinimide** ester was prepared and used to form a polyfunctional polymer network with N,N-dimethylacrylamide, and ethylene glycol bismethacrylate. The polymer network was fixed to a microscope slide covered with a layer of benzophenone-based bifunctional silane linker. A 5-amino-modified oligonucleotide was printed onto the polymer network and coupled to the surface to make a sensor.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 22 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:706511 HCAPLUS
DOCUMENT NUMBER: 137:353583
TITLE: Change of Surface Structure of Poly(3-**hydroxybutyrate**) Film upon Enzymatic **Hydrolysis** by PHB Depolymerase
AUTHOR(S): Yoshie, Naoko; Oike, Yoshihiro; Kasuya, Kenichi; Doi, Yoshiharu; Inoue, Yoshio
CORPORATE SOURCE: Department of Biomolecular Engineering, Tokyo Institute of Technology, Yokohama, 226-8501, Japan
SOURCE: Biomacromolecules (2002), 3(6), 1320-1326
CODEN: BOMAF6; ISSN: 1525-7797
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The change in the surface structure of poly[(R)-3-**hydroxybutyrate**] [PHB] films upon the **enzymic hydrolysis** was **analyzed** by attenuated total reflection IR [ATR/IR] spectrometry. As enzymes, PHB depolymerases isolated from Ralstonia pickettii T1 and Pseudomonas stutzeri were used. By curve decomposition of the carbonyl stretching band of ATR/IR spectra, the change in the surface crystallinity of PHB films by exposure to buffer containing 0, 1, and 4 μg of PHB

depolymerases was estimated It has been widely believed that the enzymic **hydrolysis** first occurs in the amorphous phase, followed by the degradation in the crystalline phase, and extracellular PHB depolymerase can **degrade** only polymer chains in the surface layer of the film. Therefore, the surface crystallinity had been expected to increase upon the enzymic degradation However, the results were contrary to this expectation. The surface crystallinity was decreased by the enzymic attack. Because ATR/IR spectrometry is sensitive to a small change in mol. structure of the sample surface, the decrease in the crystallinity shown by ATR/IR expts. probably does not indicate the complete loss of regularity of the crystalline phase. Because the chains at crystalline surface are more mobile than those inside the crystals, the C:O band for crystalline surface may appear at a position similar to those of the amorphous or interfacial phase in ATR/IR spectra of PHB. Only the chains inside the crystals may contribute to the C:O band of the crystalline phase. Thus, we rather suppose that the decrease in the crystalline peak of the ATR/IR spectra reflects the change in chain mobility or the increase of crystalline surface area by cracking of lamellas at the surface layers of PHB films or both.

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 23 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:534795 HCAPLUS
DOCUMENT NUMBER: 137:137123
TITLE: Optical studies regarding adsorption behavior of phosphorylcholine(PC)-modified antifouling surfaces for sensor applications
AUTHOR(S): Pfeifer, P.; Schwotzer, G.; Willsch, R.; Frant, M.; Donath, J.; Liefeith, K.
CORPORATE SOURCE: Institut fur Physikalische Hochtechnologie e. V, Jena, Jena, 07745, Germany
SOURCE: Initiativen zum Umweltschutz (2002), 41, 81-88
CODEN: INUMFG
PUBLISHER: Erich Schmidt Verlag GmbH & Co.
DOCUMENT TYPE: Journal
LANGUAGE: German
AB Antifouling effects were analyzed of phosphorylcholine (PC)-containing **polymer layers** on gold and glass surfaces by surface **plasmon** resonance (SPR) spectroscopy and ELISA. PC-coated surfaces showed lower protein adsorption than uncoated surfaces. The differences between PC-coated and uncoated surfaces were more clear by SPR spectroscopy than by ELISA measurement.
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 24 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:265710 HCAPLUS
DOCUMENT NUMBER: 134:289731
TITLE: Chemical sensor and coating for same
INVENTOR(S): Liu, Guojun; Shinar, Ruth; Porter, Marc D.

PATENT ASSIGNEE(S): Iowa State University Research Foundation, Inc., USA
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001025780	A1	20010412	WO 2000-US26092	20000921

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-413568 A 19991006

AB An acoustic wave-based chemical sensor using a crystal substrate and a coating of polymer beads is disclosed. The polymer beads preferably include a high glass transition temperature polymer. **Transducers** are connected to the crystal substrate to generate an alternating potential across the crystal substrate, which in turn causes the crystal to resonate due to the converse piezoelec. effect. The coating absorbs the analyte e.g. a volatile organic compound, thus changing the mass of the chemical sensor, and accordingly changing its resonant frequency. The **transducers** detect the change in resonant frequency to indicate that the analyte is present. The polymer bead coating has a large surface area which facilitates mass uptake of large amts. of VOCs, improved acoustic properties even with relatively thick coatings, and a wide operational temperature range.

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 25 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:499734 HCAPLUS
DOCUMENT NUMBER: 135:89489
TITLE: Nonenzymic disposable uric acid-detecting electrode strip, method for producing the same and its use
INVENTOR(S): Shen, Yen-shih; Hsieh, Chun-lung; Wu, Kun-lieh
PATENT ASSIGNEE(S): Apex Biotechnology Corporation, Taiwan
SOURCE: U.S., 10 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6258230	B1	20010710	US 1999-295400	19990421

PRIORITY APPLN. INFO.: TW 1998-87118595 A 19981109

AB The present invention relates to a nonenzymic disposable uric acid detecting electrode strip which directly detects the concentration of uric acid in liquid samples under a low operation voltage of below 400 mV and pH values from 7.0 to 10.0. When the electrode strip is applied to detect the concentration of uric acid in human body, it avoids interference signals caused from any other components in blood and will not be interfered by ascorbic acid unless the concentration of ascorbic acid increases to 15 times its normal concentration in blood. Not only serum but also whole-blood can be taken as a sample for detecting the uric acid concentration thereof. The uric acid detecting electrode strip is modified by a water soluble redox electron mediator. The electrode strip is easy to carry and can be easily made, particularly mass-produced. Carbon ink was screen-printed on one side of a polyvinyl chloride substrate to form a conducting film comprising a set of isolated and disconnected anode and cathode. An elec. insulating film was partially printed over the conducting film. A circle area (formed by the working electrode and reference electrode) was printed with a slurry containing microcryst. cellulose, PEG, PVP, K2HPO4, KH2PO4, H2O, and potassium ferricyanide. A protective film was coated on and around the circle area of reaction film.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 26 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:523601 HCAPLUS

DOCUMENT NUMBER: 135:104655

TITLE: Surface **plasmon** resonance **enzyme** sensor, and surface **plasmon** resonance **measuring** method

INVENTOR(S): Iwasaki, Gen; Tanba, Osamu

PATENT ASSIGNEE(S): Nippon Telegraph and Telephone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001194298	A2	20010719	JP 2000-312510	20001012
US 6649361	B1	20031118	US 2000-697356	20001027

PRIORITY APPLN. INFO.: JP 1999-306296 A 19991028

AB A simple and highly sensitive method is provided for accurately and

rapidly measuring surface **plasmon** resonance with a large number of test samples in a wide range within a short time using an enzyme sensor. The surface **plasmon** resonance enzyme sensor used in this method is constituted with a metal thin film of gold or silver formed on an optically transparent baseplate, a **polymer film** possessing an electrochem. redox function and modifying the surface of the metal thin film, and an enzyme-immobilized film (e.g., horse radish peroxidase, glucose oxidase) which exchanges an elec. charge with an electrode via the **polymer film.** The **polymer film** carries out an electron transfer reaction with both the metal thin film and the enzyme. Diagrams describing the sensor apparatus assembly are given.

L27 ANSWER 27 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:825836 HCAPLUS
DOCUMENT NUMBER: 138:149749
TITLE: Combined QCM and electrochemical **impedance** measurements for biosensor applications
AUTHOR(S): Sabot, Andrea; **Sumner, Claire**; **Krause, Steffi**
CORPORATE SOURCE: Department of Chemistry, University of Sheffield, Sheffield, S3 7HF, UK
SOURCE: Proceedings - Electrochemical Society (2001), 2001-18(Chemical and Biological Sensors and Analytical Methods II), 98-108
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The reproducible degradation of thin **polymer films** in the presence of an analyte or a reaction product of an analyte can be utilized to produce highly sensitive **transducers** for disposable biosensors. This type of **transducer** has been particular useful for the **detection** of **enzyme** concns. down to 2+10-11 mol dm-3. The degradation of the films was monitored using various techniques such as **capacitance** measurements and surface **plasmon** resonance. A novel combination of **Quartz** Crystal **Microbalance** (QCM) and electrochem. **impedance** spectroscopy has been developed to monitor the degradation of thin **polymer films** in the presence of enzymes. The exptl. setup allows real time monitoring of quartz crystal **impedance** spectra and classical ac **impedance** spectra providing a wealth of information about the polymer enzyme interactions and the mechanism of polymer degradation The degradation of **poly(ester amide)** in the presence of α- **chymotrypsin** was investigated as a model system.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 28 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:881347 HCAPLUS

DOCUMENT NUMBER: 134:26945
TITLE: Method and apparatus for **enzyme detection** based on the **enzyme** -induced degradation of a **polymer film**
INVENTOR(S): **Krause, Steffi**; **Sumner, Claire**
PATENT ASSIGNEE(S): Cambridge Life Sciences PLC, UK
SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000075360	A2	20001214	WO 2000-EP4855	20000527
WO 2000075360	A3	20010419		
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
GB 2350677	A1	20001206	GB 1999-13051	19990604
EP 1185688	A2	20020313	EP 2000-936818	20000527
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: GB 1999-13051 A 19990604
WO 2000-EP4855 W 20000527

AB The present invention provides a method for **detecting** the presence of an **enzyme** based on the enzyme-induced degradation of a **polymer film.** In a preferred embodiment, the invention provides a method for **detecting** the presence of an **enzyme** comprising contacting the sample to be analyzed with a substrate, at least part of which is covered with a **layer** of a biodegradable **polymer**, the polymer being degraded by the **enzyme** to produce a signal; and **measuring** any signal produced.

L27 ANSWER 29 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:274699 HCAPLUS
DOCUMENT NUMBER: 128:305906
TITLE: Enzyme electrodes using enzymes contained in water-soluble polymer microparticles
INVENTOR(S): Tsuta, Kyoko; Ogasawara, Minoru; Aizawa, Masuo
PATENT ASSIGNEE(S): Iatron Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10113200	A2	19980506	JP 1996-289121	19961011

PRIORITY APPLN. INFO.: JP 1996-289121 19961011

AB The electrodes comprise (1) water-soluble polymer microparticles containing enzymes and (2) an conductive fine particle layer in which (1) is dispersed. The electrodes for blood anal. are not affected by hematocrit and suitable for disposable use because of being cheap. A glass-epoxy substrate having leads was coated with a mixture of (a) a hydrophobic composition containing graphite, C black, Bu Cellosolve acetate, poly(vinyl butyral), and naphthoquinone (electron mediator) and (b) a phosphate buffer containing glucose oxidase and **dextran** to give an enzyme electrode. Determination of glucose concentration using the electrode as a working electrode, a Ag/AgCl reference electrode, and a Pt counter electrode was also shown.

L27 ANSWER 30 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:588951 HCAPLUS
DOCUMENT NUMBER: 127:173479
TITLE: Graphite functional layers in diagnostic test kits
INVENTOR(S): Hildenbrand, Karlheinz
PATENT ASSIGNEE(S): Bayer A.-G., Germany
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 790494	A1	19970820	EP 1997-101601	19970203
EP 790494	B1	20011114		
R: AT, BE, CH, DE, DK, ES, FI, FR, GB, IT, LI				
DE 19605582	A1	19970821	DE 1996-19605582	19960215
AT 208894	E	20011115	AT 1997-101601	19970203
ES 2167625	T3	20020516	ES 1997-101601	19970203
CA 2197386	AA	19970816	CA 1997-2197386	19970212
JP 09229931	A2	19970905	JP 1997-41407	19970212

PRIORITY APPLN. INFO.: DE 1996-19605582 A 19960215

AB The invention concerns the use of graphite in different forms for separating cells from blood as well as test devices for the anal. of blood constituents without interference from the cells. In one example, a multilayer test strip is constructed for the visual detection of blood glucose. The device consists of: (1) an erythrocyte retention layer composed of graphite impregnated with potato lectin; (2) a reagent **layer** composed of a **polymer** blend membrane impregnated with peroxidase, 3-methyl-2-benzothiazolinone hydrazone, 3-dimethylaminobenzoic acid, and glucose oxidase; (3) a perforated test strip support; and (4) a transparent, perforated cover film. When a blood sample is applied to the test strip, the erythrocytes are held back by the

graphite layer, and a blue color reaction is observed in a few seconds that is related to the glucose concentration Other examples include a visual cholesterol test strip and an amperometric test strip.

L27 ANSWER 31 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:394301 HCAPLUS
DOCUMENT NUMBER: 127:2737
TITLE: Enzyme electrodes comprising an enzyme immobilized onto a porous electroconductive layer with a protecting layer
INVENTOR(S): Asakura, Toshikage; Yamato, Hitoshi; Ohwa, Masaki; Khan, Golan Faruque
PATENT ASSIGNEE(S): Japat Ltd., Switz.
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 771867	A2	19970507	EP 1996-810200	19960401
EP 771867	A3	19980902		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
CA 2173551	AA	19970501	CA 1996-2173551	19960404
JP 09127041	A2	19970516	JP 1996-95310	19960417

PRIORITY APPLN. INFO.: EP 1995-810670 19951030
EP 1995-810752 19951130

AB An enzyme electrode is provided which comprises: (a) an electroconductive support member (ESM) comprising a porous electroconductive layer, (b) an enzyme adsorbed or immobilized onto the surface of said porous layer in an catalytically effective amount, and (c) a protecting layer to prevent leaching of said enzyme from the porous layer. Thus, a porous electroconductive support member (ESM) is prepared from platinized activated carbon, mixing with bovine serum albumin, and adding a binder resin (8101 RS, a polyester resin). Lactate oxidase (Aerococcus viridans) is dispensed on the ESM, gelatin solution sprayed over the enzyme layer to form the stabilizing layer, crosslinking with glutaraldehyde, and Nuclepore applied as a protective cover layer. The response of the electrode is unchanged even after 59 days' continuous operation and showed extremely good linearity with a wide concentration range. The electrode may be used for indicating amperometrically the catalytic activity of an enzyme in the presence of a liquid containing substance acted upon the **enzyme** and to be **detected**, and in the presence of an elec. potential on the electrode.

L27 ANSWER 32 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:239633 HCAPLUS
DOCUMENT NUMBER: 120:239633
TITLE: Devices and methods for detection of an analyte based

upon light interference

INVENTOR(S): Bogart, Gregory R.; Moddel, Garret R.; Maul, Diana M.; Etter, Jeffrey B.; Crosby, Mark; Miller, John B.; Blessing, James; Kelley, Howard; Sandstrom, Torbjorn; Stiblert, Lars

PATENT ASSIGNEE(S): Biostar, Inc., USA

SOURCE: PCT Int. Appl., 208 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 14

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9403774	A1	19940217	WO 1993-US5673	19930610
W: AT, AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9179004	A1	19921021	AU 1991-79004	19910320
AU 653940	B2	19941020		
EP 539383	A1	19930505	EP 1991-910056	19910320
EP 539383	B1	19960918		
R: BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE				
JP 05506936	T2	19931007	JP 1991-509344	19910320
JP 3193373	B2	20010730		
ES 2094224	T3	19970116	ES 1991-910056	19910320
JP 2001235473	A2	20010831	JP 2000-287242	19910320
AU 9345360	A1	19940303	AU 1993-45360	19930610
JP 07509565	T2	19951019	JP 1994-505280	19930610
JP 3506703	B2	20040315		
EP 727038	A1	19960821	EP 1993-915341	19930610
R: ES, FR, GB, IT, SE				
EP 1126278	A2	20010822	EP 2001-108521	19930610
EP 1126278	A3	20011017		
R: ES, FR, GB, IT, SE				
JP 2002116208	A2	20020419	JP 2001-236186	19930610
JP 3507048	B2	20040315		
JP 2002122601	A2	20020426	JP 2001-236166	19930610
JP 2002122603	A2	20020426	JP 2001-236198	19930610
JP 2002139498	A2	20020517	JP 2001-236144	19930610
JP 3456984	B2	20031014		

PRIORITY APPLN. INFO.:

US 1992-924343	A	19920731
EP 1991-910056	A	19910320
JP 1991-509344	A3	19910320
WO 1991-US1781	A	19910320
EP 1993-915341	A3	19930610
JP 1994-505280	A3	19930610
WO 1993-US5673	W	19930610

AB Methods for analyzing an optical surface for an analyte of interest in a test sample and related instruments/devices are disclosed. The method entails the use of a thin-film optical immunoassay device whereby an

analyte of interest is detected in a test sample through spectral changes in the light impinging on the surface prior to and after the binding of the analyte to a reactive substrate layer(s). The device includes a substrate which has a 1st color in response to light impinging thereon. The substrate also exhibits a 2nd color which is different from the 1st color. The 2nd color is exhibited in response to the same light when the analyte is present on the surface. Thus, SiO was vapor deposited on a polished monocryst. Si wafer to a thickness of 550 Å; the film had a golden interference color. The film was activated with N-(2-aminoethyl)-3-aminopropyltrimethoxysilane, coated with a DNP-albumin conjugate to a thickness of 40Å, rinsed, and dried. The coated wafer was used in a competitive immunoassay for DNP using goat anti-DNP antibody and an **ellipsometer** to measure the change in mass at the surface from the change in light intensity.

L27 ANSWER 33 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:35442 HCAPLUS
DOCUMENT NUMBER: 118:35442
TITLE: High-accuracy biosensor for microanalysis of body fluids
INVENTOR(S): Yoshioka, Toshihiko; Nankai, Shiro
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04295755	A2	19921020	JP 1991-61643	19910326
JP 2702818	B2	19980126		

PRIORITY APPLN. INFO.: JP 1991-61643 19910326

AB The title biosensor for, e.g., glucose microdetn. is constructed consisting of an electrode system containing a working electrode and an opposite electrode on an insulating base plate and a reactive layer (membrane) containing a 1st **layer** comprising hydrophilic **polymers** and electron receptors, a 2nd **layer** comprising hydrophilic **polymers**, and a 3rd **layer** comprising redox enzyme (glucose oxidase). Use of hydrophilic polymers facilitates the molding of the reaction layer by temperature to a desired shape or form. Diagrammatic views of the biosensor are presented.

L27 ANSWER 34 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:531381 HCAPLUS
DOCUMENT NUMBER: 115:131381
TITLE: Hydrophilic **polymer layer** in biosensor for microanalysis of body fluids
INVENTOR(S): Yoshioka, Toshihiko; Nankai, Shiro; Kawaguri, Mariko; Otani, Mayumi; Iijima, Takashi

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03054447	A2	19910308	JP 1989-274194	19891020
JP 08016664	B4	19960221		

PRIORITY APPLN. INFO.: JP 1989-98214 19890418

AB The title biosensor (e.g. enzyme biosensor) consists of (1) an insulating plate containing a measuring electrode and an opposite electrode and (2) a reaction layer system (covered on the electrode system) containing a 1st **layer** comprising hydrophilic **polymers** (e.g. cellulose type substances) and redox enzymes (e.g. glucose oxidase), a 2nd **layer** comprising hydrophilic **polymers**, and a 3rd **layer** comprising electron acceptors (K ferricyanate). Hydrophilic polymers in an organic solvent were mixed with electron acceptors and spread on the 2nd layer to form the 3rd layer. The biosensor showed storage stability due to separation of the redox enzyme layer and the electron acceptor **layer** with a hydrophilic **polymer layer.** The electrode response was not interfered by proteins and other substances in test samples. Construction of a glucose biosensor is cited as an example.

L27 ANSWER 35 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:474258 HCAPLUS
DOCUMENT NUMBER: 113:74258
TITLE: Construction of optrodes with immobilized enzymes, and their use in the determination of effectors of the respiratory chain, of oxidases, and of dehydrogenases
INVENTOR(S): Burstein, Claude; Fave, Jean Louis; Poisson, Roger; Gayet, Jean Charles
PATENT ASSIGNEE(S): Universite Paris VII, Fr.
SOURCE: PCT Int. Appl., 50 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9004016	A1	19900419	WO 1989-FR531	19891013
W: JP, US				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
FR 2637912	A1	19900420	FR 1988-13587	19881014
FR 2637912	B1	19910111		

PRIORITY APPLN. INFO.: FR 1988-13587 19881014

AB The title optrodes, especially miniaturized and portable and automated, contain immobilized enzyme and associated adsorbed luminescent material, e.g. a perylene derivative The increase in luminescence emission or in excited state lifetime, caused by O consumption in the enzymic reaction and representative of analyte concentration, is detected. The optrodes are useful in (veterinary) medicine, agricultural and food industries, etc. Thus, Escherichia coli, which had been depleted of the majority of endogenous respiratory substrates, was glutaraldehyde-immobilized in the presence of an excess of albumin, D,L-lactate, and MgSO4 and used in an optrode containing perylene dibutyrate to determine L-lactate. The overall apparent Michaelis constant was 5 mM. A standard curve for 0-5 mM lactate is shown, in which the fluorescence signal is expressed as percent of apparent maximum velocity. Systems for determination of lactate with other immobilized enzymes (e.g. lactate oxidase) are given, as are systems for determination of **succinic** acid, NADH, NADPH, ethanol, and pyruvate.

L27 ANSWER 36 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:232289 HCAPLUS
DOCUMENT NUMBER: 112:232289
TITLE: **Enzymically**-amplified piezoelectric specific binding **assay**
INVENTOR(S): Ward, Michael David; Ebersole, Richard Calvin
PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co., USA
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8909937	A1	19891019	WO 1989-US402	19890207
W: JP				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
US 4999284	A	19910312	US 1988-178366	19880406
EP 408578	A1	19910123	EP 1989-902683	19890207
EP 408578	B1	19940622		
R: DE, FR, GB, IT				
JP 03503567	T2	19910808	JP 1989-502496	19890207
CA 1332221	A1	19941004	CA 1989-602569	19890331
PRIORITY APPLN. INFO.:			US 1988-178366	19880406
			WO 1989-US402	19890207

AB An analyte is detected or determined in a liquid sample by (1) reacting the sample with a **quartz** crystal **microbalance** (QCM) having an analyte capture reagent bound to the surface of the QCM or bound to a support surface in close proximity to the surface of the QCM; (2) reacting the bound analyte with (a) an enzyme-antianalyte reagent or -analyte conjugate and (b) a substrate which is capable of being catalyzed by the

enzyme to form a product which can accumulate on or react with the QCM surface to induce a mass change, thereby leading to a resonant frequency change of the QCM. The surface may be coated with a silane, **polymer**, or organic thin **film** to enhance the process. Assay of adenosine-5'-phosphosulfate reductase (APSR) using alkaline phosphatase-anti-APSR antibody conjugates, 5-bromo-4-chloro-3-indolylphosphate (BCIP) as substrate, and quartz crystals with a polyvinylferrocene layer and adsorbed anti-APSR antibody is given as an example. A pos. response for APSR was measured by the decrease in frequency, corresponding to the precipitation of the oxidized dimer of BCIP, an indigo dye analog.

L27 ANSWER 37 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:175265 HCAPLUS
DOCUMENT NUMBER: 112:175265
TITLE: High-accuracy bioelectrode and its manufacture
INVENTOR(S): Nankai, Shiro; Kawaguri, Mariko; Fujita, Mayumi; Iijima, Takashi
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8909397	A1	19891005	WO 1989-JP337	19890330
W: US				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
JP 01253648	A2	19891009	JP 1988-80829	19880331
JP 2502665	B2	19960529		
JP 2502666	B2	19960529	JP 1988-80842	19880331
JP 01291153	A2	19891122	JP 1988-121002	19880518
JP 06058338	B4	19940803		
EP 359831	A1	19900328	EP 1989-904212	19890330
EP 359831	B1	19950830		
R: DE, FR, GB, IT				
US 5120420	A	19920609	US 1989-445632	19891127
US 5120420	B1	19991109		

PRIORITY APPLN. INFO.:

JP 1988-80829	A	19880331
JP 1988-80842	A	19880331
JP 1988-121002	A	19880518
JP 1988-20946	A1	19880129
WO 1989-JP337	W	19890331

AB A bioelectrode comprises: an insulating base board, on which are leads, an electrode system mainly made of C, an insulating layer, and a reaction layer composed of an enzyme or an electron acceptor (and a hydrophilic polymer); a cover; and the space enclosed by the board and the cover. When a biol. sample solution is brought into contact with the inlet of the

apparatus having the above-described structure, the sample solution is introduced
into its inside, while the air within the space is rapidly discharged through the outlet, causing the space to be filled with the sample solution up to the outlet so that there will not be bubbles left within the space. Measurement can be conducted inexpensively at a high speed with a high accuracy through simple procedures. The construction of a biosensor for determining glucose in blood comprising CM-cellulose in its reaction layer is given as an example.

L27 ANSWER 38 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:95013 HCAPLUS
DOCUMENT NUMBER: 112:95013
TITLE: Multilayered integral enzyme sensor system
INVENTOR(S): Kawaguri, Mariko; Fujita, Mayumi; Nankai, Shiro; Iijima, Takashi; Suetsugu, Sachiko; Komatsu, Kiyomi; Morigaki, Kenichi; Kobayashi, Shigeo
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01134246	A2	19890526	JP 1987-292326	19871119

PRIORITY APPLN. INFO.: JP 1987-292326 19871119
AB The title sensor for substrate determination (based on a reaction of the substrate
with an enzyme and an electron acceptor) consists of an electrode system containing $\geq$1 measuring electrode and 1 opposite electrode on an insulating plate, a water-absorbing **polymer layer**, an induction **layer** containing a redox enzyme, a filter membrane layer, and a porous layer (for structure) containing an electron acceptor. The sensor is suitable for microanal. of biol. samples. Construction of a glucose sensor is given as an example.

L27 ANSWER 39 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:95012 HCAPLUS
DOCUMENT NUMBER: 112:95012
TITLE: Water-absorbing **polymer layer** in enzyme bioelectrode system
INVENTOR(S): Nankai, Shiro; Kawaguri, Mariko; Suetsugu, Sachiko; Komatsu, Kiyomi; Morigaki, Kenichi; Kobayashi, Shigeo
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01134244	A2	19890526	JP 1987-292324	19871119
JP 2502635	B2	19960529		

PRIORITY APPLN. INFO.: JP 1987-292324 19871119

AB In an **enzyme** bioelectrode system consisting of a **measuring** electrode and an opposite electrode for substrate determination based on the reaction of the sample with an enzyme and an electron acceptor, the electrode system is covered with a water-absorbing **polymer layer** and a water-absorbing **polymer** -enzyme mixture **layer** to enhance the response and accuracy. The water-absorbing polymer is CM-cellulose, **polyvinylpyrrolidone**, starch, gelatin, polyacrylate, polyvinyl alc., or polymaleic anhydride. Construction of a glucose sensor is given as an example.

L27 ANSWER 40 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:51749 HCAPLUS
DOCUMENT NUMBER: 112:51749
TITLE: Water-absorbing **polymer layers** in enzyme biosensor for substrate determination
INVENTOR(S): Kawaguri, Mariko; Fujita, Mayumi; Nankai, Shiro; Iijima, Takashi; Suetsugu, Sachiko; Komatsu, Kiyomi; Morigaki, Kenichi; Kobayashi, Shigeo
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01054345	A2	19890301	JP 1987-212092	19870826

PRIORITY APPLN. INFO.: JP 1987-212092 19870826

AB An integrated biosensor consists of an electrode system containing at least a measuring electrode and an opposite electrode on an insulating plate covered with a water-absorbing **layer**, a water-absorbing **polymer layer** containing redox enzymes, and a porous membrane. Substrate determination is based on the reaction of a sample with the redox enzyme and an electron acceptor. The water-absorbing polymers are starch, CM-cellulose, gelatin, etc. Construction of a glucose sensor is given as an example. The biosensor is stable and able to rapidly measuring the substrate.

L27 ANSWER 41 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:628529 HCAPLUS

DOCUMENT NUMBER: 111:228529
TITLE: Water-absorbing polymers for glucose biosensor
INVENTOR(S): Nankai, Shiro; Kawaguri, Mariko; Suetsugu, Sachiko; Komatsu, Kiyomi; Morigaki, Kenichi; Kobayashi, Shigeo
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63317757	A2	19881226	JP 1987-153668	19870619

PRIORITY APPLN. INFO.: JP 1987-153668 19870619

AB A glucose sensor consists of an electrode system containing a measuring electrode and an opposite electrode on an insulating plate and an enzyme layer containing glucose oxidase and mutarotase with addition of a water-absorbing polymer such as CM-cellulose.

L27 ANSWER 42 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:53736 HCAPLUS
DOCUMENT NUMBER: 110:53736
TITLE: Analytical element for **measuring** **enzyme** activity
INVENTOR(S): Kato, Keiko; Kageyama, Shigeki; Amano, Yoshikazu; Arai, Fuminori; Katsuyama, Harumi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 272518	A2	19880629	EP 1987-117986	19871204
EP 272518	A3	19900725		
EP 272518	B1	19940413		
R: DE, GB				
JP 63157998	A2	19880630	JP 1986-305886	19861222
JP 05060360	B4	19930902		
US 5006458	A	19910409	US 1987-135670	19871221

PRIORITY APPLN. INFO.: JP 1986-305886 19861222

AB A dry anal. element for determination of enzyme activity comprises $\geq$1 water-permeable layers, $\geq$1 of which contains NAD. The increased background absorbance caused by exposure to fluorescent light is decreased if $\geq$1 of the water-permeable **layers** is a hydrophilic **polymer** composed of monomer -CH2C(R1)(CONR2R3)- (I; R1 = H, lower

alkyl; R2,R3 = H, aliphatic or aromatic hydrocarbon, R2 and R3 may be joined to form a ring) or a copolymer of I with another monomer. A multilayer dry anal. element for lactate dehydrogenase determination comprising a transparent polyethylene terephthalate film, a gelatin layer, a gelatin layer containing nitrotetrazolium blue, and a PET tricot fabric layer was coated with a solution containing lactate, NAD, diaphorase, and polyacrylamide. A similar element was prepared which contained **polyvinylpyrrolidone** instead of polyacrylamide. Both were exposed to white fluorescent light at 1000 lx for 30 min. The increase in absorbance at 540 nm for the element of the invention was 0.029, and for the control element was 0.052.

L27 ANSWER 43 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1988:450869 HCAPLUS
DOCUMENT NUMBER: 109:50869
TITLE: Dry analytical elements for enzyme determination with high sensitivity containing hydrophilic **polymer** in the diffusion **layer**
INVENTOR(S): Amano, Yoshikazu; Kageyama, Shigeki; Katsuyama, Harumi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Ger. Offen., 15 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3717913	A1	19871203	DE 1987-3717913	19870527
DE 3717913	C2	19971023		
JP 63112999	A2	19880518	JP 1986-122876	19860528
JP 63219397	A2	19880913	JP 1986-122875	19860528
JP 05052197	B4	19930804		
JP 62182652	A2	19870811	JP 1986-143754	19860619
JP 05055118	B4	19930816		
US 4889797	A	19891226	US 1987-54432	19870526

PRIORITY APPLN. INFO.:

JP 1986-122875	19860528
JP 1986-122876	19860528
JP 1986-143754	19860619
JP 1985-135530	19850620

AB A dry anal. element for determination of enzymes comprises a porous diffusion layer composed of hydrophobic fibers, said layer also containing the substrate and a hydrophilic polymer. The polymer is present in sufficient quantity to decrease the diffusion area by $\geq$20%. Thus, 1 layer of a multilayer element for amylase determination contained a styrene-N-methylmorpholiniummethylstyrene-divinylbenzene copolymer, gelatin, and a surfactant. This layer was coated with other layers containing, e.g. α-glucosidase, and finally the element was impregnated with a solution containing p-nitrophenyl-α-D-maltopentaoside.

L27 ANSWER 44 OF 68 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1984:451263 HCAPLUS
DOCUMENT NUMBER: 101:51263
TITLE: Homogeneous specific binding assay device and preformed complex method
INVENTOR(S): Greenquist, Alfred C.; Walter, Bert
PATENT ASSIGNEE(S): Miles Laboratories, Inc. , USA
SOURCE: U.S., 21 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4442204	A	19840410	US 1981-253147	19810410
CA 1201975	A1	19860318	CA 1982-400764	19820408

PRIORITY APPLN. INFO.: US 1981-253147 19810410

AB The title test element for determining ligands (antigens, haptens, or antibodies) is described which comprises a solid carrier member, such as a fibrous web matrix, e.g., paper, or a **polymeric film** or gel, incorporated with reagents for a homogeneous specific binding assay system which produces a detectable response, usually an electromagnetic radiation signal, that is a function of the presence or amount of the ligand in the sample. For example, disclosed is a test device for determining a ligand in a liquid sample, comprising (1) a reagent composition including a complex of (ii) a labeled conjugate comprising a label component coupled to the ligand or a specific binding analog thereof, and (iiii) a specific binding partner for the ligand, the label providing a detectable response, or interacting with a detectant system to provide a detectable response, which is different when the labeled conjugate is bound by the binding partner compared to when it is not so bound, whereby the detectable response is a function of the presence of the ligand in the sample, and (2) a carrier incorporated with the complex. Useful homogeneous specific binding **assay** systems include those involving **enzyme** substrate labels, enzyme prosthetic group labels, and enzyme labels. The detectable response preferably is a luminescent, fluorescent, spectrophotometric, or colorimetric response, which is measurable by visual observation or instrument means. For example, a gentamicin immunoassay was described which used gentamicin antiserum, a labeled sisomicin conjugate, and β-ggalactosidase. The dose response range with the test element was 0-2.0 μg/mL.

L27 ANSWER 45 OF 68 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 1
ACCESSION NUMBER: 2004:183780 BIOSIS
DOCUMENT NUMBER: PREV200400183358
TITLE: A reusable piezo-immunosensor with amplified sensitivity for ceruloplasmin based on plasma-**polymerized film.**

AUTHOR(S): Wang, Hua; Li, Dan; Wu, Zhaoyang; Shen, Guoli [Reprint Author]; Yu, Ruqin

CORPORATE SOURCE: State Key Laboratory for Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha, 410082, China
shenguo@cs.hn.cn

SOURCE: Talanta, (9 January 2004) Vol. 62, No. 1, pp. 201-208. print.
ISSN: 0039-9140 (ISSN print).

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 7 Apr 2004
Last Updated on STN: 7 Apr 2004

AB A reusable piezoelectric immunosensor with amplified sensitivity has been developed for the detection of ceruloplasmin (CP) in human serum. The **quartz** crystal **microbalance** (QCM) was deposited with plasma-**polymerized** n-butyl amine **film** with the surface topology further characterized by using atomic force microscopy (AFM). Anti-ceruloplasmin antibody (CP-Ab) was electrostatically adsorbed on the PPF-modified crystal via an oppositely charged polyelectrolyte layer of alginate. It was found that the alginate-mediated immobilization interface could allow for antibodies to be largely immobilized with well-retained immunoactivity. In particular, a simple regeneration process for the sensor produced, i.e. by shifting the pH, can also be realized. Moreover, an optimized assay medium containing polyethylene glycol (PEG) was tested with enhanced immunosensing response (sensitivity). A dynamic concentration range of two orders of magnitude and a detection limit of 0.15 mug ml-1 of CP were observed. Analytical results of clinical samples show that the developed immunoassay is comparable with the **enzyme**-linked immunosorbent **assay** (ELISA) method. However, it presents some superior advantages over the traditional sandwich format in that the analyzing performances are direct, rapid and simple without multiple separation and labeling steps.

L27 ANSWER 46 OF 68 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
DUPLICATE 13

ACCESSION NUMBER: 1996:570951 BIOSIS

DOCUMENT NUMBER: PREV199799285632

TITLE: Electroimmobilisation of sulphite oxidase into a polypyrrole film and its utilisation for flow amperometric detection of sulphite.

AUTHOR(S): Adeloju, S. B. [Reprint author]; Barisci, J. N.; Wallace, G. G.

CORPORATE SOURCE: Cent. Electrochem. Res. Anal. Technol., Dep. Chem., Univ. Western Sydney, Nepean, PO Box 10, Kingswood, NSW 2747, Australia

SOURCE: Analytica Chimica Acta, (1996) Vol. 332, No. 2-3, pp. 145-153.
CODEN: ACACAM. ISSN: 0003-2670.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 23 Dec 1996
Last Updated on STN: 23 Dec 1996

AB The immobilization of sulphite oxidase into a polypyrrole **film** by galvanostatic **polymerisation** has been investigated. The properties of the film were characterised by radiolabelling technique, cyclic voltammetry, resistometry, electrochemical **quartz** crystal **microbalance**, scanning electron microscopy and atomic force microscopy. The radiolabelling **measurements** revealed that the amount of **enzyme** incorporated into the polypyrrole film is influenced by the enzyme concentration, film thickness and current density. The interaction of sulphite with the immobilised enzyme was confirmed by cyclic voltammetry, resistometry and electrochemical **quartz** crystal **microbalance.** Quantification of sulphite can be made from the amperometric response resulting from this interaction by flow injection analysis.

L27 ANSWER 47 OF 68 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN DUPLICATE 5

ACCESSION NUMBER: 2001401758 EMBASE
TITLE: Protein-containing hydrophobic coatings and films.
AUTHOR: Novick S.J.; Dordick J.S.
CORPORATE SOURCE: J.S. Dordick, Department of Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY 12180, United States. dordick@rpi.edu
SOURCE: Biomaterials, (2002) 23/2 (441-448).
Refs: 20
ISSN: 0142-9612 CODEN: BIMADU
PUBLISHER IDENT.: S 0142-9612(01)00123-5
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The incorporation of enzymes and other proteins into hydrophobic **polymeric** coatings and **films** has been investigated in this study with the goal of generating biologically active materials for biocatalysis, antifouling surfaces, and biorecognition. The protein-polymer composites are created using standard solution coating techniques with poly(methyl methacrylate), polystyrene, and poly(vinyl acetate) as polymers and α- **chymotrypsin** and trypsin as biocatalysts. The specific enzyme is first extracted into a nonpolar organic solvent using hydrophobic ion-pairing. The ion-paired enzyme is dried and redissolved into a solvent also miscible with the polymer. This solution is then poured over a surface and the solvent is allowed to evaporate to form the enzyme-containing coating, which can then be delaminated to form a film. Leaching of enzyme from and activity of the biocatalytic coatings and films were evaluated. The biocatalytic coatings showed no loss of activity over ca. one week. For the biocatalytic films, the leaching rate was initially high followed by a slow rate of

enzyme loss. Activity was **measurable** for at least one month, with only ca. one-third of the initial activity lost in that time, while, being continuously incubated in a buffer solution. Activity was also exhibited on macromolecular (protein) substrates. The biocatalytic coatings could be reused over 100 times with only a modest loss of activity. Finally, coatings and films containing a lectin (Concanavalin A) were capable of selectively binding to glycoproteins, thereby extending the application of such films for use in bioseparations and biorecognition. Copyright .COPYRGT. 2001 Elsevier Science Ltd.

L27 ANSWER 48 OF 68 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2004179738 EMBASE
TITLE: Using electropolymerized non-conducting polymers to develop enzyme amperometric biosensors.
AUTHOR: Yuqing M.; Jianrong C.; Xiaohua W.
CORPORATE SOURCE: M. Yuqing, Coll. of Chemistry and Life Science, Zhejiang Normal University, Jinhua 321004, China. sky128@mail.zjnu.net.cn
SOURCE: Trends in Biotechnology, (2004) 22/5 (227-231). Refs: 43 ISSN: 0167-7799 CODEN: TRBIDM
PUBLISHER IDENT.: S 0167-7799(04)00078-2
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The response performance of amperometric biosensors can be likened to that of an uncovered electrode because the non-conducting **polymer films** used to develop these biosensors are very thin (10-100 nm), owing to their self-limited growth. The non-conducting **polymer films** also have favorable permselective properties, which could be used to eliminate possible electrochemical interference in samples. Composite structures or materials that include non-conducting polymers of, for example, phenol and its derivatives, phenylenediamines, and overoxidized or electroinactive polypyrrole could be used to optimize the biosensors. This article will discuss these issues, as well as the use of **quartz** crystal **microbalance** in the study of non-conducting-polymer- based biosensors.

L27 ANSWER 49 OF 68 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2002409186 EMBASE
TITLE: Preparation of artificial hyper-hydrophilic micro-environments (polymeric salts) surrounding enzyme molecules: New enzyme derivatives to be used in any reaction medium.
AUTHOR: Abian O.; Wilson L.; Mateo C.; Fernandez-Lorente G.; Palomo J.M.; Fernandez-Lafuente R.; Guisan J.M.; Re D.; Tam A.; Daminatti M.

CORPORATE SOURCE: J.M. Guisan, Department of Biocatalysis, Instituto de Catalisis, Campus Universidad Autonoma, 28049 Madrid, Spain. jmguisan@icp.csic.es
SOURCE: Journal of Molecular Catalysis B: Enzymatic, (2 Dec 2002) 19-20/- (295-303).
Refs: 19
ISSN: 1381-1177 CODEN: JMCEF8
PUBLISHER IDENT.: S 1381-1177(02)00180-7
COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Conference Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Although enzymes usually undergo rapid inactivations in the presence of organic media, the mechanism of these inactivations is often quite simple. An immobilized enzyme, fully dispersed inside porous supports, incubated in the presence of medium-high concentrations of water-miscible organic cosolvents under mild conditions, is mainly inactivated by the interaction of the enzyme with cosolvent molecules. Thus, the only inactivating effect is the promotion of conformational changes on enzyme structure. In this paper, we propose an optimized strategy to stabilize immobilized enzymes against the presence of organic solvent: the generation of a hyper-hydrophilic shell surrounding each individual protein molecule by using several **layers** of different **polymers.** We have optimized different variables, such as the size of the polymers, the number of **polymer layers**, the correct assembly of the hydrophilization protocol, etc. After building a shell formed by different layers of polyethylenimine and **dextran** aldehyde, the addition of **dextran** sulfate promoted a qualitative increase in the enzyme stability. As an example, penicillin G acylase (PGA) has been immobilized-stabilized on Sepabeads (a rigid support that does not swell when changed from aqueous to anhydrous media), and the protocol to hydrophilize the protein nano-environment has been applied. This protocol originates derivatives able to stand even 90% of dioxane without significant losses of activity after several days, while conventional derivatives were readily inactivated under these conditions.

L27 ANSWER 50 OF 68 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2002299784 EMBASE
TITLE: Characterization of oxidoreductase-redox **polymer** electrostatic **film** assembly on gold by surface **plasmon** resonance spectroscopy and Fourier transform infrared-external reflection spectroscopy.
AUTHOR: Simonian A.L.; Revzin A.; Wild J.R.; Elkind J.; Pishko M.V.
CORPORATE SOURCE: A.L. Simonian, Department of Biochemistry, Texas AandM University, College Station, TX 77843-2128, United States. als@pop.tamu.edu
SOURCE: Analytica Chimica Acta, (27 Aug 2002) 466/2 (201-212).
Refs: 36

ISSN: 0003-2670 CODEN: ACACAM
PUBLISHER IDENT.: S 0003-2670(02)00603-7
COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The electrostatic assembly of nanocomposite thin films consisting of alternating layers of an organometallic redox polymer (RP) and oxidoreductase enzymes, glucose oxidase (GOX), lactate oxidase (LOX) and pyruvate oxidase (PYX), was investigated. Multilayer nanostructures were fabricated on gold surfaces by the deposition of an anionic self-assembled monolayer of 11-mercaptoundecanoic acid, followed by the electrostatic attachment of a cationic RP, poly(vinylpyridine Os(bis-bipyridine)(2)Cl-co-allylamine) (PVP-Os-AA), and anionic oxidoreductase enzymes. Surface **plasmon** resonance (SPR) spectroscopy, Fourier transform infrared external reflection spectroscopy (FT-IR-ERS) and electrochemistry were employed to characterize the assembly of these nanocomposite films. The surface concentration of GOX was found to be 2.4ng/mm(2) for the first enzyme layer and 1.96ng/mm(2) for the second enzyme layer, while values of 10.7 and 1.3ng/mm(2) were obtained for PYX and LOX, respectively. The apparent affinity constant for GOX adsorption was found to be 8x10(7)M(-1). FT-IR-ERS was used to verify the incorporation of GOX and its conformational stability inside of these nanocomposite thin films. An SPR instrument with a flow-through cell was modified by additions of Ag/AgCl reference and Pt counter electrodes, with the gold-coated SPR surface film serving as the working electrode. This enabled real-time observation of the assembly of sensing components and immediate, in situ electrochemical verification of substrate-dependent current upon the addition of enzyme to the multilayer structure. A glucose-dependant amperometric response with sensitivity of 0.197μA/cm(2)/mM for a linear range of 1-10mM of glucose was obtained. The SPR and FT-IR-ERS studies also showed no desorption of polymer or enzyme from the nanocomposite RP-GOX structure when stored in aqueous environment occurred over the period of 3 weeks, suggesting that decreasing substrate sensitivity with time was due to loss of enzymatic activity rather than loss of film compounds from the nanostructure. .COPYRGT. 2002 Elsevier Science B.V. All rights reserved.

L27 ANSWER 51 OF 68 EMBASE COPYRIGHT 2004 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 97030118 EMBASE
DOCUMENT NUMBER: 1997030118
TITLE: Selective monitoring of peptidase activities with synthetic polypeptide substrates and polyion-sensitive membrane electrode detection.
AUTHOR: In Suk Han; Ramamurthy N.; Yun J.H.; Schaller U.; Meyerhoff M.E.; Yang V.C.
CORPORATE SOURCE: V.C. Yang, College of Pharmacy, University of Michigan, 428

Church St., Ann Arbor, MI 48109-1065, United States
SOURCE: FASEB Journal, (1996) 10/14 (1621-1626).
Refs: 14
ISSN: 0892-6638 CODEN: FAJOEC
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB A novel method to monitor specific peptidase activities in biological samples as complex as undiluted plasma/blood is described. The approach is based on the design of synthetic polypeptide substrates in which di- or trirarginine sequences are linked to each other via one or more other amino acids recognized specifically by the peptidase to be determined. Detection of **chymotrypsin** and renin activities using synthetic substrates P4 (F-R-R-R-F- V-R-R-F-NH2) and P5 (R-R-R-L-L-R-R-L-L-R-R-R), respectively, serves to demonstrate the principles of this new assay system. A polyion-sensitive membrane electrode, prepared by doping **polymer films** with dinonylnaphthalene- sulfonate (DNNS), is shown to exhibit significant non-equilibrium electromotive force (EMF) responses toward these and other polycationic substrates at microgram/milliliter levels under physiological conditions. The same electrode, however, exhibits much smaller total EMF response toward the shorter fragments of the synthetic peptides generated by peptidase activity; hence, the addition of peptidase to a solution containing the synthetic substrate yields a change in electrode EMF response, the rate of which is proportional to the activity of peptidase present. Other synthetic polycationic peptides as well as natural polycationic peptides (e.g., protamine) that lack specific cleavage sites for **chymotrypsin** and renin, yet are detected by the DNNS-based membrane electrode, do not elicit any significant change in EMF response in the presence of the peptidases, confirming the feasibility and utility of the proposed bioanalytical method.

L27 ANSWER 52 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2004-224141 [21] WPIDS
CROSS REFERENCE: 2002-619131 [66]; 2003-523398 [49]
DOC. NO. NON-CPI: N2004-176992
DOC. NO. CPI: C2004-088373
TITLE: Biochip for detecting analytes in test sample, has carrier with hydrophilic surface, light-blocking matrix layer, coupling matrix layer having cross-linking agent, sensing elements, modification matrix layer.
DERWENT CLASS: A89 B04 D16 S03
INVENTOR(S): KURESHY, F; MAHANT, V K
PATENT ASSIGNEE(S): (KURE-I) KURESHY F; (MAHA-I) MAHANT V K
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2004005697	A1	20040108	(200421)*		24

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2004005697	A1 CIP of	US 2000-735402	20001212
		US 2003-346879	20030117

PRIORITY APPLN. INFO: US 2003-346879 20030117; US 2000-735402 20001212

AN 2004-224141 [21] WPIDS

CR 2002-619131 [66]; 2003-523398 [49]

AB US2004005697 A UPAB: 20040326

NOVELTY - A biochip has carrier with hydrophilic surface, light-blocking matrix layer (BM) having light-blocking agent coupled to hydrophilic surface, coupling matrix layer (CM) coupled to BM, cross-linking agent physically suspended in CM, several sensing elements binding to cross-linking agent, modification matrix layer having chromatographic function, light absorbing function, penetration delay function, assay function coupled to CM.

DETAILED DESCRIPTION - A biochip (I) has:

(a) a carrier (2) with a hydrophilic surface;

(b) at least one light-blocking matrix layer (BM) having a light-blocking agent (7), where at least one BM is coupled to the hydrophilic surface and is effective to render the carrier optically inactive;

(c) a coupling matrix layer coupled to the BM, and a cross-linking agent physically suspended in the coupling matrix layer (CM), where the cross-linking agent is optionally covalently coupled to CM;

(d) several sensing elements, each of the several sensing elements having a capture portion that binds to the cross-linking agent, and where the sensing elements are bound to the cross-linking agent in the CM in predetermined positions; and

(e) modification matrix layer coupled to CM, where the modification matrix layer provides at least one of a chromatographic function, a light absorbing function, a penetration delay function, and an assay function.

Optionally a biochip (II) has a carrier with a first and second surface, where at least one first and second surface is hydrophilic or where the first surface has a hydrophilic coating, a base matrix layer coupled to a hydrophilic coating or hydrophilic surface, a BM coupled to the base matrix layer and having a light-blocking agent, where the BM is coupled to the base matrix layer and is effective to render the carrier optically inactive, (c), (d), where at least one of the base layer, BM, and CM comprises an additive chosen from buffer, a detergent, humectant, and a light-blocking agent and where the several sensing elements are coupled to the CM through droplet deposition of liquid droplets having a diameter of between 20-1000 micro m to form a corresponding several

sensing element spots.

USE - (I) or (II) is useful for detecting analytes such as nucleic acids, proteins, macromolecules and other haptens in the test sample. (I) or (II) is useful in the field of genomics, proteomics such as pharmacogenomics, gene expression, mutation analysis, compound screening, toxicology, single nucleotide polymorphism (SNPs) analysis, short tandem repeats (STRs) and molecular diagnostics. (I) or (II) are also useful in a cartridge, which is useful in automated detection system.

ADVANTAGE - (I) or (II) efficiently detects analytes in the test sample. (I) or (II) is easily adaptable for massive parallel experimentation in various field of applications.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of stage comprising a single level matrix.

stage comprising single level matrix 1

carrier 2

hydrophilic bridging agent 4

matrix 5

light blocking agent 7

Dwg.1/13

L27 ANSWER 53 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN

ACCESSION NUMBER: 2003-646459 [61] WPIDS

DOC. NO. NON-CPI: N2003-514239

DOC. NO. CPI: C2003-176921

TITLE: Container for stool samples is a prepared package with a closable vessel containing a liquid reagent/solvent, to take an inserted sample holding rod in a sealed environment, which can be transported in an aircraft.

DERWENT CLASS: B04 D16 P31 S03

INVENTOR(S): SCHEEFERS, H

PATENT ASSIGNEE(S): (SCHE-N) SCHEBO BIOTECH AG

COUNTRY COUNT: 27

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003068398	A1	20030821	(200361)*	GE	50
RW: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI SK TR					
W: JP US					
DE 10205709	A1	20030828	(200365)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003068398	A1	WO 2003-EP1390	20030212
DE 10205709	A1	DE 2002-10205709	20020212

PRIORITY APPLN. INFO: DE 2002-10205709 20020212

AN 2003-646459 [61] WPIDS
AB WO2003068398 A UPAB: 20030923
NOVELTY - Container for the preparation of samples for analysis, and particularly stool samples, has a closable vessel (3c) to hold a liquid reagent and/or a liquid solvent and a sample holding rod (13c).

DETAILED DESCRIPTION - Container for the preparation of samples for analysis, and particularly stool samples, has a closable vessel (3c) to hold a liquid reagent and/or a liquid solvent and a sample holding rod (13c). The rod has at least one scoop recess (15c) on a peripheral surface at one end, to be inserted into the vessel through an opening (22c) with at least one stripping shoulder (23c). The vessel has an integrated closure section which can be separated at a nominal fracture point. When the closure is removed, it exposes an outflow opening for liquid to be forced out of the vessel in droplets by squeezing the vessel or using an internal plunger (19c,21c). The prepared package contains a sheet of water soluble film to dispose of the stool.

USE - The apparatus is for the preparation of stool samples for **analysis.** The **analysis** can be using **enzymes**, immunochemical e.g. by **enzyme** linked immunoabsorbent **assay** (ELISA) and/or a lateral flow system and also by a microbiological process to determine the presence of germs or parasites. It can be used for elastinase pancreas tests or for the identification of the pyruvate kinase of tumors of the M2 type.

ADVANTAGE - The container gives an exact dosage of the sample in a liquid reagent and/or solvent, which is effectively sealed especially in an under pressure environment when being transported in an aircraft.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic section through the sample container.
vessel 3c
sample holding rod 13c
scoop recess 15c
plunger 19c,21c
insertion opening 22c
stripping shoulder 23c
Dwg.4/9

L27 ANSWER 54 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2003-482062 [45] WPIDS
CROSS REFERENCE: 2002-682687 [73]; 2003-183891 [18]; 2004-080049 [08]
DOC. NO. NON-CPI: N2003-383410
DOC. NO. CPI: C2003-128798
TITLE: Closed substrate platform useful for sample analysis, comprising vent for expulsion of air from container, and container comprising sample analysis area, fluid inlet and outlet, and microfluidic analysis platform.
DERWENT CLASS: A96 B04 C07 D16 S03
INVENTOR(S): JAKOBSEN, M H; KONGSBAK, L; MOLLER, S; NORHOLM, M
PATENT ASSIGNEE(S): (JAKO-I) JAKOBSEN M H; (KONG-I) KONGSBAK L; (EXIQ-N) EXIQON AS
COUNTRY COUNT: 100
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003036298	A2	20030501	(200345)*	EN	57

RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

US 2003138969	A1	20030724	(200352)
US 2003152927	A1	20030814	(200355)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003036298	A2	WO 2002-IB4726	20021025
US 2003138969	A1	US 2002-57841	20020124
US 2003152927	A1 Provisional	US 2000-243349P	20001025
	Provisional	US 2001-305726P	20010716
		US 2001-32381	20011025

PRIORITY APPLN. INFO: DK 2002-133 20020125; US 2001-32381 20011025; WO 2001-IB2902 20011025; US 2002-57841 20020124; US 2000-243349P 20001025; US 2001-305726P 20010716

AN 2003-482062 [45] WPIDS

CR 2002-682687 [73]; 2003-183891 [18]; 2004-080049 [08]

AB WO2003036298 A UPAB: 20040426

NOVELTY - A closed substrate platform (I) comprising a container comprising an area for sample analysis and a microfluidic analysis platform, and a vent for expulsion of air from the container, is new. The container comprises at least one inlet for the introduction of fluid to the sample analysis area and an outlet for removal of fluid from the sample analysis area.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) providing (I) for analysis of biomolecules, comprising providing an analysis platform part having a defined channel system depressed in a planar surface, to provide an analysis sample flow path, and applying a planar substrate over the channel system to provide a closed sample flow path; and

(2) microfluidic analysis platform system (II) comprising a slide for use with a detector to analyze a sample fluid having an analyte portion, where the slide comprises a closed substrate platform having at least one channel, an inlet in fluid communication with the channel proximal to a

first end of the channel, and a waste chamber and waste vent, where the channel has a detection region downstream of the inlet unit accessible by the detector for analyzing a characteristic of the sample, where the waste chamber and waste vent in fluid communication with the channel downstream of the detection region, transfer unit for moving the sample from the inlet to the detection region when the sample is introduced into the microfluidic analysis platform for facilitating accurate analysis by the detector of the sample at the detection region.

USE - (I) is useful for sample analysis, which involves applying a sample (fluid sample) to (I) and evaluating the sample. The sample is delivered to the substrate platform through a pipette or syringe, and where the delivery of the sample into the substrate platform provides force sufficient for flow of the sample through the platform. (I) is also useful for detecting DNA sequence variation, DNA sequencing, single nucleotide polymorphism (SNP) analysis, genotyping, deletion analysis and gene expression. Preferably, (I) is useful for detecting at least one allele in the 2 different single nucleotide polymorphisms (SNPs) beta 2AR16 and beta 2AR27. (I) and (II) are useful for real time analysis of hybridization events. (All claimed.) (I) may be used for any application which normally uses a conventional microscope slide and can be used in conjunction with any type of equipment typically used to manipulate or evaluate a standard microscope slide. Preferably, (I) is useful for covalent immobilization of biomolecules, e.g. peptides, polypeptides, nucleic acids, nucleic acid binding partners, proteins, receptors, antibodies, enzymes oligo saccharides, polysaccharides, cells, arrays of ligand (e.g. non-protein ligands), etc. (I) is also useful in gene expression analysis including e.g. detection of intron/exon splicing, and to evaluate if expression of certain genes is modulated by drug candidates, toxicology studies including toxicology on cells, protein-to-protein interaction, plant and animal breeding studies, environmental studies, etc. (I) is also useful in pesticide analysis where a ligand of a pesticide or a pesticide degradation product is immobilized in the analysis area for binding to pesticide in a sample such as ground water or milk; for blood gas **analysis**, e.g. where an **enzyme** immobilized in the sample **analysis** area is capable of binding to a blood gas such as oxygen dissolved in a blood sample to generate a signal, for protein:protein binding studies, protein:drug binding studies, detection of antibodies, bacteria or parasites in a biological sample such as milk, urine, blood or plasma.

ADVANTAGE - The microfluidic analysis platform design of the closed substrate platform can allow for use of reduced volumes of sample and buffers as compared to conventional arrays into which previously used liquids are push by the application of new ones into the inlet. (I) is compatible with standard equipment for handling of standard microscope slides, such as microscope, scanners, racks, staining jars, storage boxes etc. An advantage of (I) size and positioning of the waste chamber, into which previously used liquids are push by the application of new ones into the inlet.

DESCRIPTION OF DRAWING(S) - The drawing shows the top and cross-sectional view of an adapter

Adapter 710

Inlet 720
Conical-shaped adapter 722.
Dwg.1/7

L27 ANSWER 55 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2003-371845 [35] WPIDS
DOC. NO. NON-CPI: N2003-296571
DOC. NO. CPI: C2003-098690
TITLE: Distal tip of biosensor ion sensing **transducer** for detecting analytes having halogenated organic compound in soil, has biocomponent having an enzyme, and a treatment of biocomponent for maintaining enzymatic efficacy.
DERWENT CLASS: A89 B03 B04 C02 C07 D13 D15 D16 J04 K02 K04 P81 S03
INVENTOR(S): DAS, N; REARDON, K F
PATENT ASSIGNEE(S): (COLS) UNIV COLORADO STATE RES FOUND
COUNTRY COUNT: 100
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003025627	A2	20030327	(200335)*	EN	29

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003025627	A2	WO 2002-US17407	20020601

PRIORITY APPLN. INFO: US 2001-295211P 20010601
AN 2003-371845 [35] WPIDS
AB WO2003025627 A UPAB: 20030603
NOVELTY - Distal tip of a biosensor ion sensing **transducer** for detecting an analyte containing halogenated organic compound in an environment, has:
(a) biocomponent having an enzyme e.g. hydrolases, subclass EC 3.8,
(b) the biocomponent immobilized to a surface of tip,
(c) treatment of biocomponent for maintaining enzymatic efficacy, and
(d) the biocomponent stabilized by e.g. crosslinking surface of immobilized biocomponent.
DETAILED DESCRIPTION - A distal tip (42) of a biosensor ion sensing **transducer** for use in detecting an analyte containing a halogenated organic compound in an environment (40), comprises:

(a) a biocomponent (44) comprising at least one enzyme such as hydrolases, subclass EC 3.8, and lyases, subclass EC4.5, for carrying out a dehalogenation of the compound,

(b) the biocomponent immobilized to a surface of the tip by entrapment within a hydrogel, entrapment within a polymeric network, microencapsulation, covalent-bonding or adsorption,

(c) a treatment of the biocomponent for maintaining a period of enzymatic efficacy, and

(d) the biocomponent stabilized by crosslinking a surface of the immobilized biocomponent, crosslinking a **polymer layer** to the biocomponent, adding a gel-hardening agent and a stabilizing agent to the biocomponent, and modifying a component of the immobilizing unit.

An INDEPENDENT CLAIM is also included for producing a biosensor distal tip comprising an ion sensing **transducer** and a biocomponent for use in detecting an analyte comprising an halogenated organic compound in an environment, involves immobilizing the biocomponent comprising an enzyme such as hydrolases, subclass EC3.8, and lyases, subclass EC 4.5, for carrying out a dehalogenation of the compound, to a surface of the tip by entrapping the enzyme within hydrogel secured to the surface, entrapping the enzyme within a polymeric network secured to the surface, microencapsulating the enzyme, covalent-bonding a second component of the biocomponent to the surface, crosslinking the enzyme to a support material secured to the surface, and adsorbing the enzyme into the surface, treating the biocomponent for maintaining a period of enzymatic efficacy, and the stabilizing the biocomponent by crosslinking a surface of the immobilized biocomponent, crosslinking a **polymer layer** to the biocomponent, adding a gel-hardening agent and a stabilizing agent to the biocomponent, and modifying a component of the immobilizing unit.

USE - The distal tip is useful for detecting a halogenated analyte such as s-triazine compounds, gamma -hexachlorocyclohexane, DDT in soil or aqueous environment (claimed). The biosensors are useful in wide variety of applications: medical uses include disposable one-way sensors (assays) for routine blood, saliva, or urine testing, and in vivo sensors for monitoring crucial parameters during surgery or in intensive care units. Food and drink industry applications include contaminant detection, verification of product content (analyte glucose and sucrose concentrations), monitoring of raw material conversion and evaluation of product freshness, process control applications include monitoring pH, temperature and substrate and dissolved gas concentrations in various processes such as fermentation and microbial and cell growth. Environmental monitoring applications include monitoring concentration and toxicity of contaminants (e.g. analytes such as heavy metals, pesticides, etc.) in surface and groundwater and in waste streams and in soils. Defense and security industry applications include measuring the presence of chemical warfare agents such as nerve gases and mustard gas, detection of trace vapors, explosives and drugs.

ADVANTAGE - The tip can be used for single- or multiple-use applications, or for continuous real-time monitoring over a selected time period, of an aqueous or soil environment. The tip collects information about physical properties of wide range of analytes without requiring

sophisticated equipment and complicated procedures. Simplicity of design can lead to reduced fabrication costs making kits economically feasible for handy off-site use-allowing information to be readily available. The unique combination of immobilization and stabilizing features provide a robust distal tip design. Several biosensor tips having similar **transducer** types (optical or electrochemical) are incorporated into a bundle providing a package of different types of information relating to the environment by sampling simultaneously or sequentially.

DESCRIPTION OF DRAWING(S) - The figure shows a fiber optic pH sensor system.

environment 40
distal tip 42
biocomponent 44
dehalogenase 45
matrix 46
pH optode 49
Dwg.3/10

L27 ANSWER 56 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2004-080292 [08] WPIDS
DOC. NO. NON-CPI: N2004-064120
DOC. NO. CPI: C2004-032952
TITLE: Solid support for chemiluminescent assays comprising chemiluminescent quantum yield enhancing material and several probes for biopolymer target.
DERWENT CLASS: A89 B04 D16 S03
INVENTOR(S): EDWARDS, B; GEISER, T G; MENCHEN, S M; SPARKS, A L; VOYTA, J C; GEISER, T; MENCHEN, S; SPARKS, A; VOYTA, J
PATENT ASSIGNEE(S): (EDWA-I) EDWARDS B; (GEIS-I) GEISER T G; (MENC-I) MENCHEN S M; (SPAR-I) SPARKS A L; (VOYT-I) VOYTA J C; (APPL-N) APPLERA CORP
COUNTRY COUNT: 102
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003134286	A1	20030717	(200408)*		23
WO 2003062790	A2	20030731	(200408)	EN	
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW					
AU 2003225521	A1	20030902	(200422)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE

US 2003134286	A1	US 2002-46730	20020117
WO 2003062790	A2	WO 2003-US1404	20030117
AU 2003225521	A1	AU 2003-225521	20030117

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003225521	A1 Based on	WO 2003062790

PRIORITY APPLN. INFO: US 2002-46730 20020117
AN 2004-080292 [08] WPIDS
AB US2003134286 A UPAB: 20040202

NOVELTY - A solid support for chemiluminescent assays comprising a chemiluminescent quantum yield enhancing material and several probes for a biopolymer target, where the probe are covalently, ionically or physically attached to a surface of solid support.

DETAILED DESCRIPTION - A solid support (I) for chemiluminescent assays comprising:

(1) a chemiluminescent quantum yield enhancing material and several probes for a biopolymer target, where the probe are covalently, ionically or physically attached to a surface of solid support;

(2) a functional **polymer layer** adjacent to a layer having a cationic microgel, where the functional **polymer layer** comprises azlactone **polymer layer** or a porous **polyamide** layer; or

(3) a polymer having a repeating unit defined by formula (F1).

n = positive integer; and

R = n-pentyl group.

INDEPENDENT CLAIMS are also included for:

(1) a kit (II) for conducting chemiluminescent assays to determine the presence or absence of a component of an analyte;

(2) a kit (III) for conducting chemiluminescent assays to determine the presence or absence of a component of an analyte;

(3) a kit (IV) for conducing chemiluminescent assays to determine the presence or amount of a component of an analyte, comprising a dioxetane substrate bearing an enzyme-labile protecting group which when cleaved yields a chemiluminescent reporter molecule, a biopolymer probe-enzyme complex, where the biopolymer probe is specific for the component being **assayed**, and where the **enzyme** is capable of cleaving the enzyme-labile protecting group, and (I)-(c);

(4) making (M1) a solid support for chemiluminescent assays having high feature density, involves providing a shrinkable backing material, applying a solid support to the shrinkable backing material, applying a chemiluminescent quantum yield enhancing material to an exposed surface of the solid support, applying several probes for a biopolymer target to an exposed surface of the solid support, and shrinking the backing material; and

(5) (I) produced by (M1).

USE - (I) is useful for modifying the surface of a solid support to enhance the quantum yield of chemiluminescent emissions which involves

reacting a functional group on a quantum yield enhancing compound with functional groups on (I) to covalently attach chemiluminescent enhancing moieties to the solid support surface. The functional groups on (I) comprise azlactone groups. The quantum yield enhancing compound comprises a quaternary onium polymer or a quaternary onium compound having the general formula (F3), where the step of covalently bonding the enhancing moiety to the support surface involves reacting an amino group on the quaternary onium polymer or the amino group on the quaternary onium compound with functional groups on the support surface.

Q = N or P;

LINK = divalent linker moiety;

R1, R2, and R3 = an alkyl group, or an aryl group; and

X- = counter ion.

(I) comprises a **polyamide**, the above method further involves forming the functional groups on the **polyamide** surface by reacting amine or carboxylate groups on the **polyamide** surface with an activating agent. The activating agent is reacted with amine groups and the activating agent is chosen from carbonyl diimidazole, **ihydroxysuccinimidyl** carbonate, phosgene, and phenylchloroformate. The activating agent is reacted with carboxylate groups and the activating agent is chosen from **dihydrozysuccinimidyl** carbonate, carbodiimides, oxalyl chloride, and carbonyl diimidazole. The quantum yield enhancing compound comprises a latent functionality, the above method further involves reacting a functional group on a probe for a biopolymer target with the latent functionality on the quantum yield enhancing compound to covalently attach the probe to the quantum yield enhancing compound. (I) is useful for conducting a chemiluminescent assay, where the presence or amount of one or more components of an analyte is determined which involves contacting the analyte with (I), treating the analyte on (I) with a biopolymer probe-enzyme complex, incubating the enzyme complex treated analyte with an enzyme-cleavable 1,2-doxetane, where the enzyme-cleavable 1,2-dioxetane can be cleaved by an enzyme to yield a chemiluminiescent dioxetane reporter molecule, and measuring the degree of chemiluminescence obtained, where (I) comprises an azlactone **polymer layer** adjacent to a layer having a cationic microgel or a porous **polyamide** layer adjacent to a layer with a cationic microgel, and where the analyte is contacted with an exposed surface of the azlactone **polymer layer** or the porous **polyamide** layer opposite the cationic microgel layer. The above method involves washing the solid support surface after the treating step. The functional **polymer layer** comprises an azlactone **polymer layer**, where the dioxepane reporter molecule has a half-life that is sufficiently long to allow the reporter molecule to diffuse through the functional **polymer layer** and become sequestered in the layer comprising a cationic microgel. The dioxepane reporter molecule has a half-life of from about 2 seconds to about 60 minutes. The above method further involves covalently bonding the probe to a surface of the functional **polymer layer.**

The biopolymer probe is an antibody, the method further involves binding an antigen target to the antibody. The contacting step further involves fixing the analyte on the exposed surface. The reporter molecule is

dioxepane phenolate anion. (I) is useful for conducting a chemiluminescent assay, where the presence or amount of one or more components of an analyte is determined which involves contacting the analyte with an exposed surface of (I), treating the analyte on (I) with a biopolymer probe-enzyme complex, incubating the enzyme complex treated analyte with an enzyme-cleavable 1,2-dioxetane, where the enzyme-cleavable 1,2-dioxetane can be cleaved by the enzyme to yield a chemiluminescent reporter molecule, and measuring the degree of chemiluminescence obtained, where (I) comprises a quaternized azlactone functional polymer. The quaternized azlactone functional polymer comprises azlactone repeating units quaternized with amino-functional quaternary onium compounds. The azlactone functional polymer comprises quaternized benzyl halide repeating units. The above method further involves covalently bonding the biopolymer probe to the surface of (I). The contacting step further involves fixing the analyte on the exposed surface (all claimed).
Dwg.0/9

L27 ANSWER 57 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2003-777201 [73] WPIDS
CROSS REFERENCE: 2003-354451 [33]
DOC. NO. NON-CPI: N2003-622790
DOC. NO. CPI: C2003-213730
TITLE: Reading a microarray devices comprises providing an array, attaching an oxidation/reduction enzyme to a target molecule, applying the target molecule and an **enzyme** substrate to the array, and **measuring** a voltage signal.
DERWENT CLASS: A89 B04 D16 S03 U11 U12 U13
INVENTOR(S): DILL, K
PATENT ASSIGNEE(S): (DILL-I) DILL K
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003082601	A1	20030501	(200373)*		26

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2003082601	A1 CIP of	US 2001-944727	20010830
		US 2002-229755	20020827

PRIORITY APPLN. INFO: US 2002-229755 20020827; US 2001-944727 20010830
AN 2003-777201 [73] WPIDS
CR 2003-354451 [33]
AB US2003082601 A UPAB: 20031112
NOVELTY - Reading (M1) microarray devices having addressable electrodes to

determine binding between a capture probe and a target molecule, is new.

DETAILED DESCRIPTION - Reading (M1) microarray devices having addressable electrodes to determine binding between a capture probe molecule (CM) and a target molecule (T) comprises:

(a) providing an array having multiple electrodes and multiple capture molecules at sites corresponding to the electrodes;

(b) non-specifically attaching an oxidation/reduction enzymatic moiety to one or multiple (T) in a sample for analysis to create a prepped target sample;

(c) administering the prepped target sample to the array and allowing for binding of (T) to CM;

(d) adding a substrate to the array that will create a local voltage signal when catalyzed by the oxidation/reduction enzyme through local generation of electrochemical reagents; and

(e) measuring for the presence or absence of a voltage signal generated locally by electrochemical reagents at each electrode having a capture molecule attached to it.

An INDEPENDENT CLAIM is also included for a microarray device (I) for detecting binding of a (T) to a capture probe (CM) comprising:

(a) an array having multiple electrodes and multiple capture molecules at sites corresponding to electrodes;

(b) an oxidation/reduction enzymatic moiety bound to one or multiple (T) in a sample for **analysis** where the oxidation/reduction **enzymatic** moiety is incubated with the CM on the array such that binding between CM and (T) will occur;

(c) a substrate molecule that will create a local voltage signal when catalyzed by oxidation/reduction enzyme through local generation of electrochemical reagents; and

(d) a voltage signal measuring device electrically connected to each electrode on the array.

USE - M1 and (I) are useful for determining binding between a capture probe and a target molecule. The target molecule is especially a DNA, RNA, single-stranded DNA, ribosomal RNA, mitochondrial DNA, cellular receptors, glycosylated membrane bound proteins, polypeptides, glycosylated polypeptides, antibodies, cellular antigenic determinants, organic molecules, metal ions, salt anions, cations, or their combinations (all claimed).

DESCRIPTION OF DRAWING(S) - The figure shows the chemical reaction using horseradish peroxidase (HRP) as the oxidation/reduction enzyme.
Dwg.1/17

L27 ANSWER 58 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2003-644638 [61] WPIDS
CROSS REFERENCE: 2003-566973 [53]; 2004-011502 [01]
DOC. NO. NON-CPI: N2003-512791
DOC. NO. CPI: C2003-176098
TITLE: Novel adsorbent chip useful for detecting analytes e.g., biomolecules such as polypeptide, polynucleotide, carbohydrate, or lipid, comprises substrate, an intermediate layer having linker arms, and an adsorbent film.

DERWENT CLASS: A18 A26 A89 B04 D16 S03 S05 T01
INVENTOR(S): POHL, C A
PATENT ASSIGNEE(S): (CIPH-N) CIPHERGEN BIOSYSTEMS INC
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2003017464	A1	20030123	(200361)*		38

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2003017464	A1	US 2001-908518	20010717

PRIORITY APPLN. INFO: US 2001-908518 20010717
AN 2003-644638 [61] WPIDS
CR 2003-566973 [53]; 2004-011502 [01]
AB US2003017464 A UPAB: 20040102
NOVELTY - An adsorbent chip (I) comprising a substrate having a surface; an intermediate layer attached to the surface, where the layer comprises linker arms; and an adsorbent film attached to the intermediate layer, comprising several adsorbent particles bound to the linker arms, where each adsorbent particle comprises a binding functionality, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) making (M1) an adsorbent chip, by covalently coupling an anchor reagent to a substrate surface through complementary reactive groups on the surface and the anchor reagent, where the anchor reagent comprises a locus for polymerization, polymerizing several polymerizable monomers to the anchor reagent through the locus, where a brush polymer is formed, and contacting the brush polymer with several adsorbent particles comprising binding functionalities, thus forming an adsorbent film immobilized on the brush polymer; and

(2) making (M2) several adsorbent chips, involves providing several chip precursors, each chip precursor comprising a substrate having a surface and an intermediate layer attached to the surface, where the intermediate layer comprises linker arms having a charge, contacting each of the chip precursors with an aliquot comprising adsorbent particles having a charge opposite to the charge of the linker arms, where the adsorbent particles comprises binding functionalities, where the adsorbent particles are attached to the intermediate layer, and where the aliquots come from a single batch of adsorbent particles.

USE - (I) is useful for detecting an analyte, by contacting the analyte with (I), and detecting adsorption of the analyte by the adsorbent film. The analyte is detected directly on the chip, by laser desorption/ionization mass spectrometry. The method further involves contacting a sample comprising analytes with the adsorbent film of the chip to allow binding of analytes to the chip, washing unbound analytes from the chip, applying a matrix material to the bound analytes and

detecting captured analytes by laser desorption/ionization mass spectrometry, where the analyte is detected by fluorescence (claimed). The analyte is a biomolecule such as polypeptide, polynucleotide, a carbohydrate, lipid or an organic molecule such as a drug candidate. (I) is useful in performing chromatographic capture, immunoassays, competitive assays, DNA or RNA binding assays, fluorescence in situ hybridization, protein and nucleic acid profiling assays. (I) is useful preferably in performing retentate chromatography which is useful in biology and medicine, and in sequential extraction of analytes from solution. (I) is also useful in chip-based assays to **detect** target such as drugs, hormones, **enzymes**, proteins, antibodies and infectious agents in various biological fluids and tissue samples. Further (I) is useful in screening of compounds such as combinatorial libraries, and for surface-enhanced laser desorption/ionization (SELDI).

ADVANTAGE - (I) is inexpensive and easy to use and provide quantitative data in multi-analyte systems.

Dwg.0/10

L27 ANSWER 59 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2002-257260 [30] WPIDS
DOC. NO. NON-CPI: N2002-199186
DOC. NO. CPI: C2002-076516
TITLE: Apparatus for measuring cellular electrical conditions, has cell support membrane comprising non-conductive material that includes pores which form electrically tight seals with contacted cells at cell attachment site.
DERWENT CLASS: A89 B04 D16 S03
INVENTOR(S): BINNIE, A; WEAVER, C D
PATENT ASSIGNEE(S): (BRIM) BRISTOL-MYERS SQUIBB CO; (BINN-I) BINNIE A; (WEAV-I) WEAVER C D
COUNTRY COUNT: 26
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2002004943	A2	20020117	(200230)*	EN	60
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR					
W: AU CA IL JP MX					
AU 2001071898	A	20020121	(200234)		
US 2002053915	A1	20020509	(200235)		
EP 1311848	A2	20030521	(200334)	EN	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR					
JP 2004514417	W	20040520	(200434)		93

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002004943	A2	WO 2001-US21484	20010706
AU 2001071898	A	AU 2001-71898	20010706
US 2002053915	A1 Provisional	US 2000-216903P	20000707

		US 2001-900627	20010706
EP 1311848	A2	EP 2001-950953	20010706
		WO 2001-US21484	20010706
JP 2004514417	W	WO 2001-US21484	20010706
		JP 2002-509762	20010706

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2001071898	A	Based on	WO 2002004943
EP 1311848	A2	Based on	WO 2002004943
JP 2004514417	W	Based on	WO 2002004943

PRIORITY APPLN. INFO: US 2000-216903P 20000707; US 2001-900627 20010706

AN 2002-257260 [30] WPIDS

AB WO 200204943 A UPAB: 20020513

NOVELTY - Apparatus (I) to measure cellular electrical conditions has cell support membrane component which has non-conductive material (NM) including top and bottom surface (TS,BS) and one or more pores, where TS has cell attachment sites (S), the pores of NM are capable of forming electrically tight seals with contacted cells at (S) and a pore that is not sealed with cell is plugged by addition of compositions to TS, BS.

DETAILED DESCRIPTION - An apparatus (I) for measuring cellular electrical conditions comprising a cell support membrane component (CSC) adapted to hold one or more cells which comprises NM that includes TS and BS and includes one or more pores, where TS of the material comprises one or more (S) which circumscribe the pores of the material and contact the cells, the pores of the material are capable of forming electrically tight seals with the contacted cells at (S), and a pore that is not sealed with a cell is plugged by the addition of one composition to TS, and another composition to BS of the material, such that the compositions interact in the pore and form a non-conductive solid product, the cells are directed to the pores by an attractant. (I) optionally comprises a first layer comprising NM as described above and a second layer comprising a non-porous, non-conductive sealant material which contacts the first layer of cells support membrane.

An INDEPENDENT CLAIM is also included for an apparatus (II) for measuring cellular electrical conditions comprising a Microchip component adapted to hold cells which comprises non-conductive material including TS and BS, where TS of the material includes (S) that are sized to contact individual cells and are coupled to an **electrode** lead/signal modifying circuitry.

USE - (I) is useful for measuring cellular electrical condition such as transmembrane potential, **capacitance**, resistance and conductance of cells such as human embryonic kidney (HEK)-293 cells, Chinese hamster ovary cells, primary neuronal cells (preferably hippocampus, dorsal root ganglia or superior cervical ganglia cells), skeletal muscle cells, smooth muscle cells, cardiac muscle cells, immune cells, epithelial cells, or endothelial cells. Optionally, (I) is useful

for measuring electrical condition of cells comprising DNA constructs directing the expression of molecules such as ion channel proteins, ion transporters, G-proteins, G-protein ligands, G-protein modulators, G-protein receptors, protein kinases or protein phosphatases, cells expressing ion channels that are specific for ions such as sodium, potassium, calcium or chloride. (I) and (II) are useful in a high throughput screening method for detecting and assaying test agents that affect cellular electrical activity. The test agents which are **assayed** are neurotransmitters, neurotransmitter analogs, **enzyme** inhibitors, ion channel modulators, G-proteins, G-protein ligands, G-protein modulators, G-protein receptors, transport inhibitors, hormones, peptides, toxins, antibodies, pharmaceutical agents or chemicals, or purinergics, cholinergics, serotonergics, dopaminergics, anesthetics, bensodiazepines, barbiturates, steroids, alcohols metal cations, cannabinoids, cholecystokinins, cytokines, excitatory amino acids, gamma amino butyric acid (GABA)ergics, gangliosides, histaminergics, melatonins, neuropeptides, neurotoxins, endothelins, nitric oxide (NO) compounds, opioids, sigma receptor ligands, somatostatins, tachykinins, angiotensins, bomebsins, bradykinins or prostaglandins. (I) and (II) are also useful for detecting and assaying cell processes such as cell-cell interaction, cell-cell fusion, viral infection, endocytosis, exocytosis, membrane recycling, or membrane-ligand interaction that affect cellular activity which involves attaching cells to (I) or (II), measuring electrical activities of cells that are in resting state, initiating cell process, measuring electrical activity of cells engaged in the process and assessing the difference between the measured electrical activities (all claimed).

ADVANTAGE - (I) and (II) allow rapid and accurate measurements of membrane resistance, conductance, potential and **capacitance** in cells. The apparatus also removes the requirement for high degree of spatial position needed for positioning of patch-clamp, intracellular **electrodes** or cells. They also allow independent measurements of electrical conditions for each cell and process these measurements in parallel. This allows both faster and more accurate readings of electrical conditions than possible with conventional techniques. The methods can be performed in temperature and atmosphere-controlled environments in (I), which allows more accurate approximation of physiological buffers, gas exchange and temperatures required by the cells for study. The apparatuses provide a much greater degree of mechanical stability to the electrophysiological recording process. The apparatuses are ideally suited to multiplexing, which allows multiple channel recording and high-throughput screening of various chemical, agent, or ligand libraries.

DESCRIPTION OF DRAWING(S) - The figure shows the porous, non-conductive cell support membrane mounted in a chamber.
Dwg.1/3

L27 ANSWER 60 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2001-257765 [26] WPIDS
DOC. NO. NON-CPI: N2001-183854
DOC. NO. CPI: C2001-077639
TITLE: Matrix carrying many specific-binding probes, useful e.g.

for detecting microorganisms, comprises probes incorporated into conductive **polymer layer** on conductive solid support.

DERWENT CLASS: A26 A89 B04 D16 J04 S03
INVENTOR(S): LELLOUCHE, J; MARKS, R S
PATENT ASSIGNEE(S): (UYNE) UNIV BEN-GURION NEGEV
COUNTRY COUNT: 89
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001017670	A1	20010315	(200126)*	EN	45
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW					
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW					
AU 9956468	A	20010410	(200137)		
EP 1218098	A1	20020703	(200251)	EN	
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001017670	A1	WO 1999-IL496	19990909
AU 9956468	A	AU 1999-56468	19990909
		WO 1999-IL496	19990909
EP 1218098	A1	EP 1999-943199	19990909
		WO 1999-IL496	19990909

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9956468	A	Based on	WO 2001017670
EP 1218098	A1	Based on	WO 2001017670

PRIORITY APPLN. INFO: WO 1999-IL496 19990909
AN 2001-257765 [26] WPIDS
AB WO 200117670 A UPAB: 20010515
NOVELTY - A matrix comprising probes and a conductive solid support is new.

DETAILED DESCRIPTION - A matrix comprising probes, where each probe is a first member of a pair forming group for a binding of a target, which is the second member of the pair forming group, and each probe species is confined to a separate, predetermined location, comprises a conductive solid support on which is a conductive **film** of (co) **polymer** composed of electropolymerizable monomers. The film has an

inner layer, contacting the support, of probe-free monomers and an outer layer of probe-linked monomers.

INDEPENDENT CLAIMS are also included for the following:

(1) a kit for detection of target species comprising the matrix plus reagents for generating a signal when a target binds to the probes;

(2) a system for detecting a target comprising the matrix and a detector for probe-target binding;

(3) producing the matrix comprising:

(a) providing a conductive solid support;

(b) imprinting a pattern of electropolymerizable monomers be deposition on the solid support, where at least some of the monomers are linked to the probes, the pattern defines locations on the solid support, where each location comprises monomers with a single probe species; and

(c) passing an electric current, simultaneously, through all of the locations causing polymerisation of the monomers; and

(4) detecting the presence of target species in a sample by binding to the probes, comprising:

(a) providing a matrix;

(b) contacting the matrix with the sample to allow specific binding of the probe to the target; and

(c) determining in which locations on the matrix a pair forming group is formed.

USE - The matrix is used to bind many target species (nucleic acids, antigens, receptor ligands, cells etc.) in a sample, e.g. for detection of infectious microorganisms, for separation/isolation (purification), in combinatorial synthesis of bio-macromolecules, for sequencing long strands of DNA by hybridization and for epitope mapping.

ADVANTAGE - The probes have better chemical and physical properties when bound to the support through a probe-free intermediate layer rather than directly. The probe-free layer improves stability (eliminating problems of probe contamination by thiol exchange within the monomers) and access of target to the probes is increased, since the probe-containing layer grows epitaxially on the intermediate layer (conventional probe layers are not oriented). Many different probe-linked monomers, deposited in selected positions by printing, can be formed simultaneously, eliminating the need for sequential exposure of the surface to different monomers.

Dwg.0/7

L27 ANSWER 61 OF 68	WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER:	2000-586351 [55] WPIDS
CROSS REFERENCE:	1995-106844 [14]; 2003-554839 [52]
DOC. NO. NON-CPI:	N2000-433887
DOC. NO. CPI:	C2000-174750
TITLE:	Electrochemical immunoassay comprises donor and acceptor polypeptides capable of combining to form active enzyme.
DERWENT CLASS:	B04 D16 J04 S03
INVENTOR(S):	BROWN, M E; GUDER, H; HURRELL, J G R; KUHN, L S; MCENROE, R J; MUDDIMAN, R W; OCHS, M L
PATENT ASSIGNEE(S):	(BOEF) BOEHRINGER MANNHEIM GMBH; (HOFF) ROCHE DIAGNOSTICS CORP

COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 6110696	A	20000829	(200055)*		16

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 6110696	A CIP of	US 1993-113548	19930827
		US 1995-494668	19950626

FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 6110696	A CIP of	US 5427912

PRIORITY APPLN. INFO: US 1995-494668 19950626; US 1993-113548 19930827
AN 2000-586351 [55] WPIDS
CR 1995-106844 [14]; 2003-554839 [52]
AB US 6110696 A UPAB: 20030813
NOVELTY - Electrochemical immunoassay for determining the presence or concentration of an analyte in a fluid sample comprises an enzyme donor reagent (I) and an enzyme acceptor reagent (II).

DETAILED DESCRIPTION - Electrochemical immunoassay for determining the presence or concentration of an analyte in a fluid sample comprises an enzyme donor reagent (I) and an enzyme acceptor reagent (II). (I) comprises an enzyme donor polypeptide conjugate and a labeled substrate comprising an enzyme substrate cleavably linked to an electroactive label. (II) comprises an enzyme acceptor polypeptide capable of combining with the enzyme donor polypeptide conjugate to form an active enzyme complex capable of catalyzing the cleavage of the electroactive label from the enzyme substrate and an antibody capable of competitively binding to the analyte and the enzyme donor polypeptide conjugate and of hindering formation of the active enzyme complex when bound to the enzyme donor polypeptide conjugate.

INDEPENDENT CLAIMS are also included for the following:

(1) an immunosensor useful for an electrochemical immunoassay of an analyte in a fluid sample, comprising:

(a) a first insulating substrate;

(b) first and second **electrodes** affixed to the first insulating substrate;

(c) a second insulting substrate, which overlays the first and second **electrodes**, has a window for exposing at least a portion of the first and second **electrodes**, and has a cutout portion at one end to allow contact between the **electrodes** and a meter and a power source;

(d) a porous substrate, which is impregnated with (I), overlays the window, and is spatially displaced from the working and counter **electrodes**;

(e) a layer of (II) on the second insulating substrate;

(f) a third insulating substrate, which overlays the second insulating substrate and has a cutout portion for exposing (I), (II) and the window in the second insulating substrate; and

(g) a fourth insulating substrate, which overlays the third insulating substrate such that a capillary space is formed within the cutout portion of the third insulating substrate, has a window for exposing a portion of (II), and has a vent hole;

(2) an immunosensor with a **polymer layer** between (I) and (II) on the second insulating substrate; and

(3) a diagnostic kit comprising (I), (II) and an electrochemical immunosensor.

USE - The assay can be used for determination of both high molecular weight analytes, e.g. proteins and viruses, and low molecular weight analytes, e.g. vitamins and drugs.

ADVANTAGE - The assay combines the speed and simplicity of homogeneous enzyme immunoassays with the simplicity, sensitivity, small sample volume requirement and adaptability of electrochemical sensor assays.

Dwg.0/9

L27 ANSWER 62 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 2001-018513 [03] WPIDS
DOC. NO. CPI: C2001-005368
TITLE: **Detecting** the presence of an **enzyme**, comprising contacting the sample with a substrate which is least partially covered with an **enzymatically** biodegradable polymer and **measuring** any signal produced.
DERWENT CLASS: A89 B04 D16
INVENTOR(S): **KRAUSE, S; SUMNER, C**
PATENT ASSIGNEE(S): (CAMB-N) CAMBRIDGE LIFE SCI PLC
COUNTRY COUNT: 20
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
GB 2350677	A	20001206	(200103)*		22
WO 2000075360	A2	20001214	(200103)	EN	
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: US					
EP 1185688	A2	20020313	(200225)	EN	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE

GB 2350677	A	GB 1999-13051	19990604
WO 2000075360	A2	WO 2000-EP4855	20000527
EP 1185688	A2	EP 2000-936818	20000527
		WO 2000-EP4855	20000527

FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 1185688	A2 Based on	WO 2000075360

PRIORITY APPLN. INFO: GB 1999-13051 19990604
AN 2001-018513 [03] WPIDS
AB GB 2350677 A UPAB: 20010116
NOVELTY - A method for **detecting** the presence of an **enzyme** comprises:
(1) contacting the sample with a substrate, at least part of which is covered by a **layer** of biodegradable **polymer** which is degraded by the enzyme to produce a signal; and
(2) measuring any signal produced.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an assay, comprising:
(A) contacting a sample which may contain a specific analyte with a substrate containing binding sites for the analyte in the presence of a conjugate of the analyte and an enzyme label; and
(B) detecting the presence of unbound conjugate as above.
USE - For **detecting** the presence of an **enzyme** in a biological or aqueous sample, particularly a **protease**, **dextranase**, **pepsin** or **lipase** (claimed).
ADVANTAGE - Does not require a mediator or washing off of excess enzyme label and is more oxygen stable than prior art systems.
Dwg.0/5

L27 ANSWER 63 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 1993-385563 [48] WPIDS
CROSS REFERENCE: 1993-377337 [47]; 1993-385564 [48]; 1993-386722 [48]
DOC. NO. NON-CPI: N1993-297871
DOC. NO. CPI: C1993-171362
TITLE: **Enzyme** electrodes for **analysis** of e.g. glucose or cholesterol - have redox **polymer** network transducing **film** on the electrode surface.
DERWENT CLASS: B04 D16 J04 S03
INVENTOR(S): GREGG, B A; HELLER, A; KATAKIS, I; KERNER, W; PISHKO, M V
PATENT ASSIGNEE(S): (GREG-I) GREGG B A; (GREG-I) GREGG B A
COUNTRY COUNT: 37
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 5264104	A	19931123	(199348)*		13

WO 9323744 A1 19931125 (199348)
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE
W: AT AU BB BG BR CA CH DE DK ES FI GB HU JP KP KR LK LU MG MN MW NL NO PL RO RU SD SE
AU 9339274 A 19931213 (199413)
EP 639268 A1 19950222 (199512) EN
R: DE DK FR GB IT
JP 07506674 W 19950720 (199537) 10
EP 639268 A4 19950412 (199613)

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
US 5264104	A	CIP of	US 1989-389226	19890802
			US 1992-880760	19920508
WO 9323744	A1		WO 1993-US2588	19930319
AU 9339274	A		AU 1993-39274	19930319
EP 639268	A1		EP 1993-908458	19930319
			WO 1993-US2588	19930319
JP 07506674	W		JP 1993-520191	19930319
			WO 1993-US2588	19930319
EP 639268	A4		EP 1993-908458	

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9339274	A	Based on	WO 9323744
EP 639268	A1	Based on	WO 9323744
JP 07506674	W	Based on	WO 9323744

PRIORITY APPLN. INFO: US 1989-389226 19890802; US 1992-880760 19920508

AN 1993-385563 [48] WPIDS
CR 1993-377337 [47]; 1993-385564 [48]; 1993-386722 [48]
AB US 5264104 A UPAB: 19940803
Enzyme electrode comprises (a) an electrode having a testing surface; and (b) a transducing film covering the testing surface, the film being formed by curing, on the electrode surfaces, a solution comprising a redox polymer and a hydroxylated di-, tri- or poly-triaziridine as a crosslinking agent.

USE/ADVANTAGE - The electrodes are capable of quantifying specific analytes in test samples, e.g. biological analytes such as glucose, urea, cholesterol, etc., in biological fluids. The film prevents in-diffusion of proteins (especially small proteins such as albumin) yet allows good in-diffusion of redox enzyme substrate and good out-diffusion of reaction prods.. This prevents reduction in current output associated with diffusion of protein to the 3-dimensional redox network.

Dwg.0/9
Dwg.0/9
ABEQ WO 9323744 A UPAB: 19940120

Enzyme electrode comprises (a) an electrode having a testing surface; and (b) a transducing film covering the testing surface, the film being formed by curing, on the electrode surfaces, a soln. comprising a redox polymer and a hydroxylated di-, tri- or poly-triaziridine as a crosslinking agent.

USE/ADVANTAGE - The electrodes are capable of quantifying specific analytes in test samples, e.g. biological analytes such as glucose, urea, cholesterol, etc., in biological fluids. The film prevents in-diffusion of proteins (esp. small proteins such as albumin) yet allows good in-diffusion of redox enzyme substrate and good out-diffusion of reaction prods.. This prevents redn. in current output associated with diffusion of protein to the 3-dimensional redox network.

L27 ANSWER 64 OF 68 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN
ACCESSION NUMBER: 1986-292861 [45] WPIDS
DOC. NO. NON-CPI: N1986-218771
DOC. NO. CPI: C1986-126845
TITLE: Integral multilayer analytical element - with high precision at low concentration ranges, useful for clinical analysis.
DERWENT CLASS: A18 A96 J04 S03
INVENTOR(S): ARAI, F; IGARASHI, T
PATENT ASSIGNEE(S): (FUJF) FUJI PHOTO FILM KK; (FUJF) FUJI PHOTO FILM CO LTD
COUNTRY COUNT: 4
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 200142	A	19861105	(198645)*	EN	29
R: DE GB					
JP 61245057	A	19861031	(198650)		
US 4895704	A	19900123	(199011)		
EP 200142	B	19911218	(199151)		
R: DE GB					
DE 3682933	G	19920130	(199206)		
JP 05025069	B	19930409	(199317)		9

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 200142	A	EP 1986-105544	19860422
JP 61245057	A	JP 1985-85336	19850423
US 4895704	A	US 1987-117355	19871027
JP 05025069	B	JP 1985-85336	19850423

FILING DETAILS:

PATENT NO	KIND		PATENT NO
JP 05025069	B	Based on	JP 61245057

PRIORITY APPLN. INFO: JP 1985-85336 19850423
AN 1986-292861 [45] WPIDS
AB EP 200142 A UPAB: 19930922
An integral multilayer analytical element comprises a water -impermeable light-transmissive support, a hydrophilic layer containing a water-absorptive hydrophilic polymer binder and a superimposed spreading layer. Element contains at least a segment capable of reacting with a component of a sample to produce detectable species, which are light detectable. Light-scattering particles are present in the hydrophilic layer and/or the layer located on a side of the support to give a light transmittance of 10-2.5%.

Support is pref. polyethylene terephthalate, polycarbonate, a cellulose ester or polystyrene; polymer binder is gelatin or its derivative, agarose, pullulan or its derivative, polyacrylamide, PVA or polyvinyl **pyrrolidone.** The spreading layer is partic. a woven or knitted fabric or fibrons pulp of an organic polymer, and the mean particle size of the particles is pref. 0.1-2 micron, and particles are titanium dioxide or barium sulphate.

USE/ADVANTAGE - Useful for analysis of an aqueous liquid sample such as a body fluid. It is easy to mfr. and high high physical strength. Uniform application of the layer containing the light-scattering particles ia mde easy because of its low concentration Measurement made with the new element show stable base lines and high reproducibility.
0/0
ABEQ EP 200142 B UPAB: 19930922
An integral multilayer analytical element which comprises a water-impermeable light-transmissive support, a hydrophilic layer containing a water-absorptive hydrophilic polymer binder and a spreading layer superposed in this order, containing at least one reagent which is contained on the spreading layer, the hydrophilic layer and/or the reagent layer which is introduced separately, which reagent is capable of reacting with a component of a sample to produce a detectable species capable of being detected by light, characterised in that light-scattering particulates in an amount to allow light transmittance of 10 to 2.5% are contained in the hydrophilic layer containing the reagent or another hydrophilic layer located on the underside (support side) therefrom.
ABEQ US 4895704 A UPAB: 19930922
Integral multilayer analytical element comprises a water-impermeable light transmissive support, a hydrophilic layer contg. water absorptive hydrophilic polymer binder and a spreading layer, superposed in this order. The element contains reagent reactive with a component of a sample to produce a detectable species detectable by light. The hydrophilic layer contains light scattering particles in an amt. to make light transmittance 10-2.5%.

Pref. hydrophilic polymer binder is e.g. gelatin, polyacrylamide, PVA or PVP and support is e.g. PET, polycarbonate, cellulose ester of polystyrene.

USE/ADVANTAGE - Esp. for **detecting** cholesterol, uric acid, **enzymes**, ammonia, proteins or creatinine in blood. Element is sensitive, physically strong and easy to mfr.
ABEQ JP 93025069 B UPAB: 19931025

Multilayer analytical element has at least one hydrophilic layer and a developing layer laminated on a light-transmitting and water-impermeable carrier. There is at least a reagent capable of forming detectable species to be detected by light in the reaction with a component in a sample and contains dispersed light scattering fine particles in an amt. resulting in 10-2.5% light transmission in the hydrophilic layer and/or the layer near the side of the carrier in which the detectable species is accumulated. The light scattering fine particles are titanium dioxide, barium sulphate etc. of 0.1-2.0 (0.2-1.0) microns average particle size. A medium in which the light scattering fine particles are dispersed is e.g. gelatin, gelatin derivative, polyacrylamide, etc.

The light scattering fine particles and a reagent may be contained in the same hydrophilic layer or a reagent may be contained in the developing layer. A mordant may be contained in the hydrophilic layer. The light-transmitting and water-impermeable carrier is e.g. film of polyethylene terephthalate 50-1 mm, pref. 80-300 microns in thickness. The hydrophilic layer is e.g. gelatin, gelatin deriv., polyacrylamide, etc. The developing layer is e.g. porous **layer** of **polymer** microbeads, glass microbeads, diatomaceous earth, etc. contg. hydrophilic polymer binder. Anolyte to be analysed by the multilayer analytical element is e.g. cholesterol, uric acid, creatinine, glucose, protein, etc.

ADVANTAGE - Eliminates the influence of reagent layer without lowering the sensitivity and raises the determination accuracy in low concn. region with lowered blank value. As a high concn. coated layer of a light-reflecting fine granular pigment can be omitted, an analytical element of improved physical strength can be easily produced. (J61245057-A)

L27 ANSWER 65 OF 68 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2002:11960 SCISEARCH
THE GENUINE ARTICLE: 502HL
TITLE: Comparison by QCM and photometric enzymatic test of the biotin-avidin recognition on a biotinylated polypyrrole
AUTHOR: Dupont-Filliard A; Billon M; Guillerez S (Reprint); Bidan G
CORPORATE SOURCE: Univ Grenoble 1, Lab Electrochim Mol & Struct Interfaces, UMR 5819, CNRS, CEA, Dept Rech Fondamentale Matiere Condensee, 17 Ave des Martyrs, F-38054 Grenoble 9, France (Reprint); Univ Grenoble 1, Lab Electrochim Mol & Struct Interfaces, UMR 5819, CNRS, CEA, Dept Rech Fondamentale Matiere Condensee, F-38054 Grenoble 9, France
COUNTRY OF AUTHOR: France
SOURCE: TALANTA, (13 DEC 2001) Vol. 55, No. 5, pp. 981-992. Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS. ISSN: 0039-9140.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 39

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB By gravimetric measurements using a **quartz** cristal

microbalance (QCM), we have studied the immobilization of biotinylated glucose oxidase enzymes (B-GOx) bound through on an intermediate avidin layer to a biotinylated polypyrrole film. The aim is to assess the amount of B-GOx specifically anchored on the biotinylated polypyrrole/avidin assembly thank to the biotin/avidin interaction between avidin and B-GOx. Indeed the estimated amount from the QCM measurement corresponds to the specific recognition of avidin/B-GOx added to a non-specific recognition (adsorption) of B-GOx. In order to discriminate these two phenomena, we have carried out a study by QCM of the anchoring of B-GOx on an avidin layer linked by adsorption to a polypyrrole free from biotin units. From QCM measurements we have deduced for the biotinylated polypyrrole/avidin assembly that the amount of B-GOx bound via the biotin/avidin interaction and those due to the avidin adsorption process correspond to 3.9 pmol cm(-2) (1.3 equivalent of B-Gox monolayer) and 1.4 pmol cm(-2) (0.46 equivalent of B-GOx monolayer) respectively. These values have been corroborated by **measurements** of the **enzymatic** activity of GOx.

L27 ANSWER 66 OF 68 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1999:135353 SCISEARCH
THE GENUINE ARTICLE: 164PB
TITLE: **Enzyme**-amplified amperometric **detection** of hybridization and of a single base pair mutation in an 18-base oligonucleotide on a 7-mu m-diameter microelectrode
AUTHOR: Caruana D J; Heller A (Reprint)
CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM ENGN, AUSTIN, TX 78712 (Reprint); UNIV TEXAS, DEPT CHEM ENGN, AUSTIN, TX 78712
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, (3 FEB 1999) Vol. 121, No. 4, pp. 769-774.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.
ISSN: 0002-7863.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: PHYS; LIFE
LANGUAGE: English
REFERENCE COUNT: 24

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A single base pair mismatch in an 18-base oligonucleotide was detected amperometrically with a 7-mu m-diameter carbon microelectrode. The hybridization was followed directly and in real time by steady-state amperometry. The microelectrode was coated with a hybridization-sensing layer in a two-step electrophoretic process, which yielded microelectrodes with reproducible dimensions. In the first step, a thin film of an electron-conducting redox polymer was deposited electrophoretically at constant potential in a low ionic strength solution. In the second step, a carbodiimide-activated single-stranded probe was reactively electrophoretically deposited and covalently attached to the redox **polymer film.** The labeling enzyme, thermostable soybean

peroxidase (SBP), was covalently bound to the 5'-end of the target single-stranded oligonucleotide. When the redox polymer and the enzyme were brought to close proximity by hybridization of the target and probe oligonucleotides, the film on the electrode switched from being a noncatalyst to a catalyst for H2O2 electroreduction at -0.06 V vs Ag/AgCl. The current observed corresponded to that generated by similar to 40 000 surface-bound and electrically connected SEP molecules.

L27 ANSWER 67 OF 68 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 1998:127042 SCISEARCH
THE GENUINE ARTICLE: YV390
TITLE: A lactate dehydrogenase amperometric pyruvate electrode exploiting direct detection of NAD(+) at a poly(3-methylthiophene):poly(phenol red) modified platinum surface
AUTHOR: Warriner K (Reprint); Higson S; Vadgama P
CORPORATE SOURCE: UNIV MANCHESTER, HOPE HOSP, DEPT MED, SALFORD M6 8HD, LANCS, ENGLAND; UNIV MANCHESTER, INST SCI & TECHNOL, CTR MAT SCI, MANCHESTER M1 7HS, LANCS, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: MATERIALS SCIENCE & ENGINEERING C-BIOMIMETIC MATERIALS SENSORS AND SYSTEMS, (DEC 1997) Vol. 5, No. 2, pp. 91-99. Publisher: ELSEVIER SCIENCE SA LAUSANNE, PO BOX 564, 1001 LAUSANNE, SWITZERLAND.
ISSN: 0928-4931.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 35
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB An amperometric L(+) lactic dehydrogenase, pyruvate sensing electrode has been developed in which NADH is regenerated at a poly(3-methylthiophene)/poly(phenol red) electrode. A key part of the sensor is the use of a dual poly(3-methylthiophene)/poly(phenol red) film which permits the reduction of enzymically active NAD(+) at an over potential of only -0.2 V (vs.Ag/AgCl) in comparison to -1 V at a bare electrode. NAD(+) reduction is proposed to take place via the quinone group of poly(phenol red) to poly(S-methylthiophene) facilitating electron transfer from the base Pt electrode. A pyruvate sensor was constructed using gel entrapped L(+) lactic dehydrogenase. The pH, cofactor concentration, buffer type and concentration all had effects on the pyruvate response. In phosphate saline buffer, pyruvate gave a response independent of L(+) lactic dehydrogenase activity, and were attributed to the acid doping of the poly(3-methylthiophene) film. With 2-[N-morpholino(ethanesulfonic acid)] (MES) saline buffer the pyruvate electrode gave a decrease in cathodic currents. The non-specific doping effect by pyruvate was negligible and this behaviour was therefore attributed to an increase in poly(3-methylthiophene) conductivity during interaction with **enzymically** produced NAD(+). Under optimised **assay** conditions of (40 mM MES pH 6 containing 50 mM KCl, 1 mM NADH) the drop in cathodic response could be related to solution pyruvate concentration. The K-M for pyruvate reduction by L(+) lactic dehydrogenase was determined to

be 3.7 mM. The different properties of poly(3-methylthiophene)/poly(phenol red) modified electrodes in phosphate and MES buffers were studied using **impedance** spectroscopy. It is proposed that phosphate entry contributes significantly to the charge transfer resistance of the dual **polymer film** despite the presence of mobile K+ and Cl- ions. However, in MES buffer the K+ and Cl- ions appeared to be the dominant charge carriers. The reasons for the different sensitivities of poly (3-methylthiophene)/poly(phenol red) modified electrodes to pyruvate in phosphate and MES buffers an discussed in terms of the ion exchange properties of the dual film. (C) 1997 Elsevier Science S.A.

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AB The possibility of reducing fibrinogen adsorption to solid surfaces by competitive adsorption of cellulose ethers (EHEC, HEC) was investigated. The surface concentration of fibrinogen adsorbed onto hydrophilic and hydrophobic (methylized) glass was **measured** with an **enzyme**-linked immunosorbent **assay.** The immunoassay was calibrated by **ellipsometry**, using the initial mass transport limitation of adsorption for calculations of the maximum amount of adsorbed protein.

At a hydrophobic surface, the presence of cellulose polymers caused a decrease of the adsorption of fibrinogen. The hydrophobic EHEC (cloud point almost-equal-to 35-degrees-C) was most efficient and abolished surface-adsorption of the protein.

At a hydrophilic surface, positive cooperativity was seen between fibrinogen and cellulose polymers. The hydrophilic HEC (cloud point > 100-degrees-C) gave the most prominent effect.

The results indicate that the affinity between a water soluble polymer or protein and a solid surface is not the only factor determining surface adsorption. The finding that there may be both positive and negative cooperativity in the adsorption of polymers shows the importance of **polymer** compatibility in **layers** of adsorbed **polymers.**